

June 24<sup>th</sup>, 2019

To: Executive Secretary, the Inspection Panel  
1818 H Street NW, MSN 10 - 1007, Washington, DC 20433, USA

## **REQUEST FOR AN INSPECTION ON THE IMPACTS OF THE BISRI DAM PROJECT IN LEBANON**

We, the Lebanon Eco Movement (LEM), are a network of 60 environmental NGOs advocating for sustainable development and the protection of the environment in Lebanon. The movement co-founded the Save the Bisri Valley Campaign in collaboration with the affected communities and a group of experts. LEM is also a member in the Arab Watch Coalition. In this request, we represent a group of residents and landowners whose addresses and signatures are enclosed below. We are also attaching a copy of a new petition that gathered more than 30,000 signatures (Annex Z.b).

Our network submitted an earlier request for inspection on June 6<sup>th</sup>, 2018, and the Panel did not recommend investigation. While we acknowledge the Panel's previous efforts to address our concerns, we believe that the first complaint was not satisfactorily answered. The Recommendation Report given by the Panel focused more on ensuring a checklist of studies is filled rather than evaluating the validity of the studies and, most importantly, the grave social, environmental and economic harms the project poses to Lebanon. Consequently, the Panel accepted inaccurate information and factual discrepancies provided by the Bank Management. **Additionally, given the emergence of new evidence and circumstances, we are submitting a new request for inspection.**

Our concerns have been already conveyed to the relevant authorities and to the World Bank Management in Beirut. However, the concerns were either disregarded, or addressed with neglect and delay. This is further elaborated later in the request.

The World Bank-funded project is planned by the Council for Development and Reconstruction (CDR) in Lebanon and situated on the Awali River in a valley of high ecological, cultural and archaeological significance. As part of the Greater Beirut Water Supply Project (GBWSP), it aims to funnel water to Beirut and its suburbs from the Bisri reservoir through water transmission lines. The GBWSP is part of the National Water Sector Strategy (NWSS) approved by the Lebanese Government in 2012. The Bisri Dam will necessitate the construction of a 73m high structure and the expropriation of 600 hectares of mostly agricultural and natural lands from different municipalities of the Chouf and Jezzine districts. The total cost of the GBWSP and associated projects is around 1.2 billion USD.

The Valley of Bisri is one of the major valleys that cut through the Mount Lebanon mountain chain, from the Chouf region down to Saida and through the district of Jezzine. It is crossed by the Bisri River which is formed by the confluence of the Aaray and Barouk rivers and which takes the name of Nahr el-Awali further downstream before reaching the sea north of Saida. The Bisri Valley displays distinct geological and ecological features that foster sensitive agricultural practices, dotted by countless archaeological remains and places of worship that testify of its historical, strategic and religious importance across all periods of history. It is a cultural landscape that shows a clear balance between a natural environment and human activities that shaped, developed and gave meaning to the landscape. One can consider it to be a part of a wider “Cultural Landscape of the Sacred Valley of Eshmoun”, centered on the entire course of the Awali/Bisri river.

If implemented, the dam will destroy the whole valley of Bisri, devastating 600 hectares of forests and agricultural land, and dismantling more than fifty archeological and historical sites. The plan calls for the dam to be built on an active seismic fault, posing risks of reservoir-induced seismicity (RTS) that would affect the safety of tens of villages in Lebanon. On top of the catastrophic social and environmental impact, the project is based on an inaccurate understanding of the water balance and an incomplete consideration of alternatives, favoring expensive large-scale infrastructure instead of an integrated, environmentally conscious water management plan.

Lebanon’s current debt levels, partially the result of decades of borrowing for real estate and large-scale infrastructure projects, have contributed to a fiscal deficit of around \$15 billion dollars (Goldman Sachs, Reuters, 2019). This has caused Lebanon to amass the highest GDP to debt ratio in the world, currently at 150 percent. While the country’s economy is on the brink of collapse, additional debt and unnecessary costs of construction and operation are harmful for both Lebanon and the Bank. The addition of another large capital expenditure project will add to, rather than alleviate, the growing debt in a context where the solution requires demand-side interventions and better monitoring, control, and management of the nation’s economic activity. In fact, we are already experiencing unbearable increases of water bills because of failed dam projects across the country.

We urge the Panel to take actions to withdraw all support for the dam and help save the Bisri Valley and Lebanon from one of the most destructive and costly projects currently planned. The various issues that need urgent attention are highlighted here below:

## **I. Loss of Cultural Landscape**

The Bisri Valley holds great historical, cultural and religious significance. In the direct hinterland of the ancient city of Sidon, extremely suitable for agriculture, located directly on historical communication routes between the coast, the Beqaa and Syria, the valley has known uninterrupted human occupation since the Bronze Age. Around 70 identified archaeological sites; settlements,

tombs, fortresses, ruined convents, a temple, bridges, roads, stairs; testify of this rich history. Even the name “Bisri” is a derivative of “Bostrenos”, the river’s name in Hellenistic times. Located on the edge of the same water course, the famous temple of Eshmoun north of Saida and the Roman-period temple of the Bisri Valley had a symbolic connection and were located on the same pilgrimage route. Indeed, the river used to also be named “Asclepios” which is the Greek equivalent of Eshmoun. A religious importance that lived on after the advent of Christianity, with historic churches and convents dotting the valley<sup>1</sup> (Atallah, 2017).

The landscape of the Bisri valley is also unique in Lebanon and unlike any other valley in the country. It is the only valley in Mount Lebanon that is deep yet wide and flat enough to house an extremely fertile agricultural plain. Because it runs on a flat terrain, the Bisri River meanders between sand banks, along a course that changes freely every year, a unique hydrological feature in the Lebanese mountains. It gathers a strong diversity of geological components that include steep limestone cliffs, sandstone slopes and a plain of alluvial silt. This multiplicity of terrains gave birth to an equally diverse vegetation. Dry northern slopes contrast with a lush southern side covered in oak trees and tall pine groves. Fields and orchards cover the fertile bottom of the valley on both sides of the river whose banks are lined with reeds and poplar trees. The Bisri Valley is thus a hotspot of biodiversity and a major resting spot for migrating birds. This ecological importance was officially acknowledged when it was classified as part of a protected natural area by the Ministry of Environment in 1998 and recognized as an exceptional natural landscape in the National Physical Master Plan of the Lebanese Territory<sup>2</sup> (CDR, 2009).

The Bisri Valley is unfortunately endangered of being destroyed, uprooted, emptied, and excavated, before being drowned by the dam. 600 hectares of natural or cultivated lands will be lost, historical churches and about 50 archaeological sites will vanish, including the temple of Marj Bisri. **The integrity of the Bisri/Awali valley system will be permanently damaged** with the loss of the Bisri Valley which is one of its major sections. A unique and essential section of the cultural landscape of the Sacred Valley of Eshmoun will be destroyed. A natural and cultural wealth which has stood preserved from war, pollution and uncontrolled urbanization, will be violently erased.

While better solutions for water exist, as will be explained later, we believe that the Bisri Valley’s cultural landscape is worthy of a full-site protection, an option acknowledged by the bank policy OP 4.11 (Item 8).

---

<sup>1</sup> <https://en.calameo.com/read/003202948e9b47ca3e063>

<sup>2</sup> [www.cdr.gov.lb/study/sdatl/English/NPMPLT.PD](http://www.cdr.gov.lb/study/sdatl/English/NPMPLT.PD)

## II. Earthquake Threats

*“It won’t be logical to stay in Bisri anymore, even if there is 1% risk. What should we tell our children? How are they going to build their homes here, and us the people who stayed and protected their lands in the worst days of war and occupation are now forced to leave. Couldn’t the World Bank find a better project for Lebanon?”* Fadi Youssef, 55, Bisri<sup>3</sup>

*“In 1956, an earthquake destroyed half of my village. If the dam is built, I fear the whole village will be ruined”.* Hanna, 80, Bisri<sup>4</sup>

We have not forgotten the earthquake of 1956 that was centered in Bisri and resulted in the destruction of several towns in Lebanon. Our concerns regarding the Bisri Dam’s risks of reservoir-triggered seismicity (RTS) are growing by the day, as the pro-dam arguments provided by CDR and Bank staff fail to be convincing. In a previous complaint, it was explained how the Bisri Dam and corresponding lake will lay directly at an intersection of two active seismic faults, the Bisri Fault and the Roum Fault, and that any future water body behind the planned Bisri dam can potentially lead to the generation of a major earthquake similar to those reported in the historical record of Lebanon (See Annex A, B).

In response to these concerns, the Bank Management, referring to ICOLD bulletin 137, provided the following argument:

*“The increase of the energy potential due to the impounded reservoir is **practically insignificant** in view of the size of the actual seismic energy that would be released. **RTEs have occurred on dams with heights over 100 m** (while Bisri Dam will be 70 m high) and are suspected to have occurred on reservoir capacity exceeding 1 billion m<sup>3</sup> (more than 10 times larger than that of the Bisri Dam). (See Annex C)*

The above World Bank statement is **incorrect** and **misleading**: First, the argument that RTS cases are “*suspected to have occurred on reservoir capacity exceeding 1 billion m<sup>3</sup>*” is unfounded. Second, while the ICOLD bulletin 137 (Annex D) does say that the probability of RTS occurrence increases with the increasing height of dams and the increasing size of the reservoirs, and that it needs to be considered “*in the first place*” for large dams with a height of over 100 m, the report continues to say that “***there are no clearly defined limits in this respect***” (p. 105). ICOLD bulletin 137 confirmed that a relatively large number of documented RTS cases has resulted in a consensus that they are realistic responses to reservoir impounding, and that several of these cases have occurred with dams way below 100m in depth and way below 1 billion m<sup>3</sup> in volume (p.23), for example:

---

<sup>3</sup> <https://www.facebook.com/BisriValley/videos/2051068478528973/>

<sup>4</sup> <https://www.facebook.com/BisriValley/videos/403572613550007/>

- Camarillas Dam in Spain (Depth: 43m; Volume: 37 million m3)
- Marathon Dam in Greece (Depth: 60m; Volume: 41 million m3)
- Preve Di Cadore Dam in Italy (Depth: 98m; Volume: 69 million m3)
- Shenwo Dam in China (Depth: 75m; Volume: 790 million m3)
- Grandval Dam in France (Depth: 78m; Volume: 292 million m3)
- and many others...

The World Bank management also argued that “*RTE cases are very few compared to the total number of large reservoirs in the world*” and that only “*four are major RTE events with a magnitude over 6.0*” have been recorded. These statements reveal an alarming neglect of the serious risks of RTS, since ICOLD bulletin 137 confirms that the RTS incidence is **not negligible** (p. 21). It is worth noting that the report does not list all suspected RTS cases, but rather RTS cases that are frequently cited and accepted.

In fact, one of the accepted RTS cases is the Marathon Dam in Greece which is much smaller than the Bisri Dam (Depth: 60m; Volume: 41 million m3). Aggravated by the gradual impounding of water, this dam triggered an earthquake of 5.75 on the Richter scale. Such magnitude can have a destructive impact, causing damage to buildings and structures.

The international standards require the determination of the seismic hazard by performing an overall study for the dam site and its reservoir while **necessarily** covering RTS potential. ICOLD bulletin 137 (p.57) states that the best approach for each large dam (a large dam is defined by the dam industry as one **higher than 15m**) is to check through full neo-tectonic analyses for the existence of faults near the dam and reservoir and to assess what earthquake potential can be assigned to each fault. While a neo-tectonic analysis of the project area was conducted by Ata Elias in 2014 (see Annex E), it was flawed and inconclusive: the study neither **quantified nor assessed the RTS potential**, and was not followed by any detailed assessment of RTS. The technical decisions of approving the Bisri Dam by the Dam Safety Panel of Experts were largely based on the report of Dr. Ata Elias that by itself is scientifically debatable, while little notice was made to the rest of the geological and seismological studies of the region.

The Bank management’s focus remained on the safety of the dam as a structure, regardless of where it is located (i.e. at the intersection of 2 active faults) and what can result from having a dam and a corresponding lake in that very area. It is important to note that the dam’s ability to withstand an earthquake was never subject of our complaint. Also, ICOLD bulletin 137 states that **RTS concerns the existing infrastructure and buildings in the storage zone rather than the dam itself (p.19)**.

During a Skype meeting with the Dam Safety Panel in 2017, the members did not sound very aware of the geological, seismological, and structural challenges of the area as follows:

- Dr. Kaare Höeg claimed that the Bisri Fault underneath the proposed dam was not active. Knowing that the Bisri Fault is definitely active (Annex A, B), such a wrong, unfounded, declaration from Dr. Höeg is shocking.
- Dr. Mustafa Erdik claimed the non-existence of the Bisri Fault by inaccurately referring to Dr. Tony Nemer's study on the seismic ruptures along the Roum fault (Nemer & Megraoui 2006), which showed an inadequate understanding of the referred material, and required an explanatory answer from Nemer himself who was present in the room.
- Dr. Mustafa Erdik refused to answer the question related to the RTS risk of the dam.
- The Panel did not sound appreciative of the facts that the lithology of the southern side of the Bisri reservoir behind the dam is a weakly consolidated sandstone, and that of the northern side is a karst-prone limestone. These lithologies will potentially cause the reservoir water to infiltrate into the subsurface and contaminate the water table of the region.

More recently, the World Bank management published a video of Prof. Mustafa Erdik, member of the Independent Design Review Board, to address the growing concerns over RTS in Lebanon. Erdik claimed the following<sup>5</sup>:

*“To trigger earthquakes, you really need very large reservoirs. The reservoir capacity of the Bsri Dam is about 125 m<sup>3</sup>, whereas if you look at the dams that have triggered earthquakes – there are 3 or 5 of them (!) – their reservoir capacity is at least 30 to 200 times higher than that of the Bisri Dam (!)”. (Mustafa Erdik, 2018)*

The use of such **erroneous** and **unfounded** figures, in a context where the lives and safety of people are at stake, is unacceptable, as we have listed several RTS cases that occurred with dams smaller than the Bisri Dam. In fact, Prof. Erdik's title as member of the Independent Design Review Board<sup>6</sup> conflicts with his involvement in a study with CDR in 2014 for the very same project (see Annex F).

---

<sup>5</sup> <https://www.worldbank.org/en/news/video/2018/03/22/bisri-dam-is-earthquake-resistant>

<sup>6</sup> <http://www.worldbank.org/en/programs/bisri-dam#4>

### III. Environmental and Social Impact Assessment

[...] *Every Sunday, Oussama Saad still visits his fields of eggplants, prunes, almonds and nectarines, which his father planted 60 years ago. "The connection between the land and the people is very strong," he said, plucking a pomegranate from an overhanging branch. "I don't want money. I want to live here. If we can't stop the dam, I will see if I can find another piece of land. But I don't think I can find a good place like this."* (DW, 2018)

A. According to the World Bank policies, *the borrower is responsible for carrying out the environmental impact assessment (EA). For Category A projects the borrower retains independent EA experts not affiliated with the project to carry out the EA. [Footnote 7 states: The borrower ensures that when individuals or entities are engaged to carry out EA activities, any conflict of interest is avoided. For example, when an independent EA is required, it is not carried out by the consultants hired to prepare the engineering design.] (OP 4.01)*

The borrower (CDR) appointed Dar al Handasah Shair and Partners for the Environmental Impact Assessment Study of the Bisri Dam (Lebanon Water Supply Augmentation Project) which is practically a critical component of the Greater Beirut Water Supply Project. However, CDR has appointed Dar al Handasah Shair and Partners for Construction Supervision Services in the Greater Beirut Water Supply Project (Tunnel and Pipeline Contract). This violates item 4 of OP 4.01 that requires an independent expertise to conduct the Environmental Assessments for Category A projects.

It is worth noting that Jean-Roger Mercier, the *Independent Environmental Advisor* who advised on the project as part of the Environmental and Social Panel (an additional requirement by OP 4.01), cannot be considered as a substitute for the independent experts who must carry out the EA and the related biodiversity surveys. Also, Mercier was a World Bank employee for more than 12 years, which raises doubts about his independence<sup>7</sup>.

B. In response to the complaint regarding the flaws in the ESIA and the rapid and short ecological surveys, the Bank Management claimed the following:

*The "rapid assessment" and "short visits" referred to in the Ecological Assessment of the ESIA concerned only the first phase of the assessment in 2012, which was undertaken to characterize the baseline ecological conditions of the Project area and "was designed to be repeated during the post-construction surveys following the same and other updated methodology." In August 2013, a detailed phase of ecological assessment was undertaken, during which the BAP was consulted upon and finalized.*

---

<sup>7</sup> <https://www.linkedin.com/in/jean-roger-mercier-1370aa43/?originalSubdomain=fr>

However, our previous request was not concerned only with the biodiversity assessment of 2012, but also with the assessment of 2013 and the Biodiversity Action Plan (BAP) of 2014 as well, which are also **incomplete** and **inconclusive**. The BAP (Annex G) relied on “a rapid flora and fauna assessment” (p.31). No major updates were added to the first phase of the assessment (2012) resulting in a severe underestimation of the biodiversity. For example, the report identifies an approximate number of 50 plants in Bisri, which is a very low number for similar areas in Lebanon. The BAP says that “*due to the short time period, the report focuses on building up a groundwork database on biodiversity in the project site*”. We believe that a thorough, complete biodiversity assessment should precede the decision to finance a destructive project in a valley identified as a Natural Regional Park according to the National Physical Master Plan (CDR, 2009).

C. The World Bank team claimed that additional biodiversity surveys are currently being conducted by MORES, the firm in charge of the Ecological Compensation Plan. However, during a meeting we had with MORES on May 31<sup>st</sup>, 2019, the firm’s team claimed that their **current inventory of plants has reached 170 to 180 species**. Though we believe that this number is still low, it is around 3.5 times higher than the one in ESIA and BAP (50 species), which raises additional concerns about the validity of the original valuation of ecosystem services and the cost-to-benefit analysis. Moreover, we reiterate that the loss of the Bisri Valley’s unique landscape and ecology cannot be compensated.

D. **The ESIA is more than 5 years old**; the biodiversity surveys are 5 to 7 years old, and the Water Quality assessments are even older (8 years). This makes the ESIA invalid and even illegal because according to decree 8633 (Item 13) on the Principles of Environmental Impact Assessment (Annex H), the Ministry of Environment’s approval of **the ESIA is valid for only two years** in case the project’s works are not started.

#### IV. Water Balance and Analysis of Alternatives

*“The Bank does not support projects involving the significant conversion of natural habitats unless there are no feasible alternatives for the project and its siting” OP 4.04*

A. **National Water Balance**: Although the Bisri Dam’s ESIA (2014) includes an analysis of alternatives, the analysis is **reductionist** and **inconclusive**. The ESIA claims that “*The last national groundwater assessment study dates back to 1970*” (Page 110 of 255). It also adopts the old assumption that the annual natural recharge rate of groundwater is 500 MCM, and that groundwater extraction, nationwide, totals 705 MCM, resulting in 205 MCM yearly deficits. These numbers are **outdated** and **irrelevant**: The State of the Environment Report<sup>8</sup>

---

<sup>8</sup> [www.undp.org.lb/communication/publications/downloads/SOER\\_en.pdf](http://www.undp.org.lb/communication/publications/downloads/SOER_en.pdf)



(MOE/UNDP/ECODIT, 2011) recommended “*treat[ing] these numbers with caution because it is all based on measurements dating from the 1960s and 1970s*” (page 58). The Federal Institute for Geoscience and Natural Resources (BGR) who collaborated with CDR on the German-Lebanese Technical Cooperation Project between 2011 and 2014, described the provided water balance as “**wrong information**” since none of its components is monitored (no quality or quantity assessments of spring discharge were conducted). BGR stated that the massive gaps of data have led to wrong water infrastructure planning and failed investments (Annex I, J).

- B. The last national groundwater assessment study was published in 2014 by UNDP and MoEW<sup>9</sup>. Although the study was available prior to the ESIA’s latest update in May 2014, and the sub-reports were already available in 2013 (Check the Water Budget report in Annex K), the ESIA disregarded the new findings:

Even though the Groundwater Assessment identified problems in water management as well as regions of water stress, it stated that “***there is an overall surplus in the groundwater budget***” (Annex L). It showed that Lebanon's groundwater natural recharge amounts to 53% of the total renewable water resources, **varying between 4,728 and 7,263 MCM**. The groundwater discharge through streams, springs and extraction is estimated to be around 2,588 MCM, and the water budget is consequently positive, varying between 2,140 MCM for the dry year to 4,675 MCM for the wet year. The assessment reported that, despite the stress on some groundwater basins in Lebanon - a problem that can be addressed and mitigated - most of the groundwater basins are not under stress.

- C. The Bank Management claimed that the 2014 Assessment of Groundwater Resources of Lebanon confirmed “*a groundwater deficit of about 150 million m<sup>3</sup> in the GBML and an associated decline in groundwater quality there*”<sup>10</sup>. This reference is **inaccurate** since the value of 150 m<sup>3</sup> was attributed to the North Lebanon Cretaceous Basin (Basin 18) and not to the Greater Beirut Mount Lebanon (GBML) that is abundant with groundwater as shown in Annex M. Among the unstressed groundwater basins is the Kesrouane Jurassic Basin (Basin 16), closer to Beirut, with a clear surplus in the groundwater budget.
- D. The assessment of the actual demand in the Greater Beirut Area (GBA) should be based on actual data, and the assessment of the future demand should take into consideration both the increasing urbanization and potential mitigation measures to decrease daily consumption per capita. However, the ESIA unreasonably considered the water availability to be constant (100 MCM

---

<sup>9</sup><https://www.undp.org/content/dam/lebanon/docs/Energy%20and%20Environment/Publications/Assessment%20of%20Groundwater%20Resources%20of%20Lebanon.pdf>.

<sup>10</sup> Management Response to the Request for Inspection, p.18

from 2010 to 2035<sup>11</sup>), while the estimated future demand relied on a relatively **high** consumption per capita per day.

- E. No investigation of the availability of groundwater or other water resources within a 15 km radius of Beirut (within Beirut and Mount Lebanon Water Establishment) was ever conducted by the relevant authorities. Such basic investigation requires the installation of flow monitoring stations for **at least one wet and one dry year** in springs within a 15 km radius of Beirut (namely Jeita, Qachqouch, Antelias, Daychounieh) along with a pumping test program for the existing wells (Qachqouch, Daychounieh, Baabda, etc...). These investigations will allow the identification of excess losses during high flow periods in the available karst springs/ potential exploitation of excess water from existing wells, along with actual deficit to be supplemented from other resources.

For instance, the average long-term discharge of the Jeita spring alone, neglected in the ESIA, was assessed by Raad and Margane (2013) in a WEAP model and was estimated at 172 MCM per year (Annex I) which is greater than the GBA's current water supply as assumed in the ESIA, let alone all other springs, as well as legal and illegal well extractions (See maps in Annex N).

The ESIA claims that “The identification of specific areas for groundwater abstraction to enhance water availability in Greater Beirut is beyond the scope of the present project” (ESIA, p.112). **The alternatives that were proposed are therefore limited and incomprehensive.**

- F. A study for the protection of the Jeita Spring was conducted in 2012 by the Federal Institute for Geoscience and Natural Resources (BGR). It stated that the Jeita catchment can provide enough water for the Greater Beirut area and that the water at its source has an excellent quality (Annex O). The study also elaborates that ***“it is more sustainable to invest in the protection of these precious water resources than in the treatment or conveyance of other more faraway resources to Beirut”***. The study shows that the losses in the existing canal between Jeita and Dbayeh WTP reaches 30% of the total flow, and that the current transmission tunnel is very old and too small (only 3.1m<sup>3</sup>/s). The report proved the ability of the Jeita Catchment area, if managed well, to fill the current gaps in the water supply for the Greater Beirut and Mount Lebanon Area. The cost of both improving the spring's capture and establishing a new water conveyor with a capacity of 7 m<sup>3</sup>/s was estimated at 30-50 million USD, a much cheaper solution than the Bisri Dam, the construction of which costs more than 617 million USD excluding costs of operation, maintenance and environmental degradation.

---

<sup>11</sup> ESIA, Volume 1, Table 7.8, Page 122 of 255

- G. The Analysis of Alternatives did not assess Artificial Recharge (AR), even though AR is an evident option in a country like Lebanon where more than 50% of its water resources infiltrate into the underground. **The potential artificial recharge volume for Beirut and Mount Lebanon varies between 92.9 and 136.3 MCM (Annex P).**
- H. The Analysis of Alternatives did not assess **Managed Aquifer Recharge (MAR) dams** that would enhance spring discharge in the GBA. A proposal for MAR dams in the Jeita catchment area was presented by BGR in 2014 with a total capacity of **27 MCM**. The ESIA, however, only assessed 3 large-scale, destructive storage dams (Annex Q).

To sum up, we propose a comprehensive, hybrid, low risk, and environmentally conscious water management plan, reforming the groundwater sector, providing additional water for the GBA from wells and springs within a 15 km radius of Beirut, improving the capture and efficiency of the Jeita Spring and the associated network, and implementing MAR and Artificial Recharge projects in the GBA.

## V. Water Quantity of the GBWSP and the Bisri Dam

- A. The flow in Awali as adopted in the ESIA relies on gauging stations **installed on the Awali River**. The flow is collected on a monthly basis, **leading to errors in estimation for karst springs**. An appropriate investigation of the flow and water availability in the springs feeding the Awali River and other resources of the Bisri Reservoir would require the installation of flow monitoring stations for at least one wet and one dry year in Jezzine, Niha, Bater, etc. and on the river course, in order to estimate correctly the quantities of water expected in the River.
- B. The studies did not include the necessary conceptualization of groundwater flow in the Awali catchment and **in each of the spring catchment feeding into Awali**: No hydrogeological model to assess groundwater flow and boundary conditions, sources and sinks in the study area was performed. Such model is essential for future forecast.
- C. The studies did not include an appropriate assessment of the impact of climate change (2050) on the water resources feeding into the Bisri Dam, and it did not evaluate alternatives to limit water shortage: The variation of water availability (Precipitation, infiltration, surface runoff, and Evapotranspiration) with climate change is not tackled. **The assumption that surface runoff increases with climate change is not supported with appropriate references.**
- D. Following concerns about the water quantities in the Greater Beirut Water Supply Project (GBWSP), the World Bank released a document (Annex R) stating that the GBWSP water will require a mix of the following sources:

- Awali/Bisri River: 60 – 100 MCM
- Qaraoun Reservoir / Litani River: 60 MCM
- Ain Zarqa spring: 14 – 41 MCM
- Jezzine spring: 5 –17 MCM

However, officials in the Litani River Authority (LRA) spoke out against these “*inflated numbers*” (Annex S). LRA confirmed that, as per the Decree No 14522 on the allocation of water resources of the Litani River, the Qaraoun Reservoir cannot provide 60 MCM of water for the Greater Beirut Area. The World Bank team shortly released a modified version of their document (Annex T), replacing the diagram of page 2 with another one that shows a reduced amount of water from Qaraoun (50 MCM). Still, the President of LRA Sami Alawiyye confirmed that the amount of 50 MCM “*is the maximum possible because of the pressure on the Qaraoun water due to unfair water exploitation by the Bekaa and South Water Authorities, and because of the need to secure adequate water sources for LRA’s irrigation projects*” (Al-Akhbar, 2019).

- E. LRA criticized the claim that an amount of 41 MCM will be provided from Ain Zarqa spring “*currently used for drinking and domestic purposes in the western Bekaa and Rashaya*”.
- F. LRA pointed out a potential conflict between the GBWSP and the Canal 800 project that aims to funnel water from the Qaraoun Reservoir to the South. According to LRA, a technical investigation showed that the ongoing implementation of Canal 800 will significantly affect the amounts of water mentioned in the GBWSP and may lead to the project’s failure during dry years.

## VI. Cost Effectiveness

We, the Lebanese citizens, are paying high prices due to the failed strategies of surface water storage. The building of dams in Lebanon has already resulted in unexpected increases of water bills, mainly in the Greater Beirut Area<sup>12</sup>. The construction and operation of the Bisri Dam will cause further increases the residents of the Capital and its suburbs may not afford.

Researchers at Oxford University<sup>13</sup> have found that policymakers systematically underestimate the costs and time required to implement large dam projects. The actual costs of large dams are 96% higher than the estimate, on average, and implementation takes 44% longer than scheduled. The report thus explicitly states that large dams are not economical: “*We find that even before*

<sup>12</sup> <https://www.elnashra.com/news/show/1293543>

<sup>13</sup> <https://www.sciencedirect.com/science/article/pii/S0301421513010926>

accounting for negative impacts on human society and environment, the actual construction costs of large dams are too high to yield a positive return” (Ansar et al., 2013). The study is based on the most comprehensive economic analysis of large dams ever undertaken. “Large dams” refers to dams with a wall height in excess of 15m.

Local Studies and reports show that the current experience in dam building and management in Lebanon has proven to be inefficient and costly (See extracts of the Strategic EA of the NWSS in Annex U). The Brissa Dam in Donniyye, completed in 2013, failed to collect water due to its location on karstic limestone surface allowing for water infiltration<sup>14,15</sup>. The dam of Qaisamani inaugurated more than two years ago hasn’t exceeded 25% of its capacity until the heaviest rain season Lebanon has known in three decades. The dam also resulted in the pollution of the Shaghour Spring in Hammana<sup>16,17,18</sup>. The Balaa Dam, still under construction, is placed on top of sinkholes and chasms, which is delaying the works and causing unexpected costs for grouting and isolation<sup>19</sup>. Likewise, the Chabrouh Dam in Keserwan leaks more than 30,000 m<sup>3</sup> per day (Bisri ESIA, 2014) and costs the Government exorbitant amounts of money for maintenance and repair. Finally, the Qaraoun Dam is extremely contaminated with heavy metals and Cyanobacteria, which makes its water unsuitable for domestic use or even for irrigation<sup>20</sup>.

In an attempt to promote the choice of the Bisri Dam, the World Bank team adopted a misleading communication about the costs and efficiency of the project. For instance, they claimed that water will flow to Beirut *entirely by gravity*. This claim was also used by CDR to undermine the option of groundwater extraction that would require pumping. The World Bank team stated the following<sup>21</sup>:

*Water will flow to Beirut entirely by gravity and will not incur pumping costs through a 26-kilometer underground tunnel and be treated at the Wardanieh Water treatment plant on the way.*

Despite these claims, water conveyance to the residents of the GBA will require pumping. Engineers working on the Damour crossing site reported that the inverted siphon in Damour is equipped with a pumping facility as it cannot function entirely by gravity<sup>22</sup>. Additionally, at least 9 major pumping stations will be necessary to convey water to the neighborhoods in GBA (Annex V). These stations include: Naame Nord Bas (29 KW), Aramoun Sud Bas (34 KW), Khalde Bas

<sup>14</sup> <https://www.almodon.com/print/3f92bc01-fe51-4be0-a318-fbbce8eb2c32/3b6582b0-29c0-4c7d-9726-d86c1e2a4fcc>

<sup>15</sup> <https://newspaper.annahar.com/article/66077>

<sup>16</sup> [www.almodon.com/politics/2017/6/12/القيسماني-حيثبت-فشل-السدود-في-لبنان/](http://www.almodon.com/politics/2017/6/12/القيسماني-حيثبت-فشل-السدود-في-لبنان/)

<sup>17</sup> <https://al-akhbar.com/Community/250371>

<sup>18</sup> <http://www.aljournhouria.com/news/index/103471>

<sup>19</sup> <https://www.lebanondebate.com/news/352182>

<sup>20</sup> [www.greenarea.me/ar/241976/السبانيو-بكتير-يامن-القرعون-الى-انان-ف/](http://www.greenarea.me/ar/241976/السبانيو-بكتير-يامن-القرعون-الى-انان-ف/)

<sup>21</sup> <http://www.worldbank.org/en/programs/bisri-dam#2>

<sup>22</sup> During a visit of the TV5 team to Damour, the engineers told the reporters that a pumping station is necessary for the inverted siphon to function properly.

(37 KW), Qobbe Bas (37 KW), Choueifet Bas (111 KW), Kfarshima Bas (97 KW), Kfarshima Haut (26 KW), Hazmieh (271 KW) and Hazmieh-Hadath (134 KW).

The costs of pumping and other costs related to operation and maintenance were not appropriately assessed in both the “analysis of alternatives” of the ESIA and the feasibility report of January 2011. For instance, the analysis of alternatives briefly states that the project incurs “little or no pumping” costs (ESIA, Page lxviii of xciv). While the analysis criticizes the increased household expenditure on water for both the “without project alternative” and the “non-dam alternative”, it does not include any comprehensive investigation of the post-construction price of water and the impact of the project on the household expenditure on water in the GBA.

At the national level, the alarming situation of the Lebanese economy requires a serious reconsideration of big loans, especially the Bisri Dam’s. Recently, two big financial services companies<sup>23,24</sup> downgraded Lebanon’s credit rating, fearing that the country might default. By giving Lebanon a big loan, the Bank is helping deepen the economic crisis and might not be able to get its money back while there are other viable, less harmful, and cheaper solutions for water.

## VII. Misleading Official Communication

A. In February 2018, the Bank Management released a brochure (Annex W) claiming the project will “*protect biodiversity*”, and that “*the biodiversity result of the Bisri Dam is ideally with net gains and at the minimum with no loss*”. During a August 2018 meeting the campaign had with MORES, the company in charge of the Ecological Compensation Plan, their director, Raji Maasri, acknowledged that a “no-loss scenario is practically impossible”. Additionally, the biodiversity surveys on which the offset plans have relied are incomplete, which makes any effort to reach a no-loss situation impossible in this respect.

The brochure also claimed that “cultural and archaeological sites [will be] preserved”. This statement distorts the actual meaning of a cultural and archaeological site. The dismantling of the valley’s temples, bridges, houses, and all other remains does not protect the historical sites per se but may at best protect pieces and parts of these physical remains. **The cultural landscape of the Bisri Valley, unique in Lebanon and the Middle East, will be totally lost.**

Moreover, both the World Bank and CDR launched a paid campaign on social media with false advertisements about the dam. The campaign exploitatively portrays a tragic situation where **Lebanese children** are suffering from drought and thirst (Annex V). This catastrophist

---

<sup>23</sup> <https://en.annahar.com/article/927924-moodys-downgrades-lebanons-credit-rating>

<sup>24</sup> <https://www.thenational.ae/business/economy/s-p-downgrades-lebanon-s-credit-outlook-to-negative-from-stable-1.832106>

portrayal is, of course, completely inaccurate, as Lebanon has never experienced, nor is it currently experiencing, extreme water scarcity. Seasonal shortages have always been due to bad management and deficient distribution system.

- B. During a recent policy dialogue<sup>25</sup> at the American University of Beirut on March 27<sup>th</sup>, 2019, the Bank’s Vice President for the Middle East and North Africa (MENA), Ferid Belhaj, claimed that Lebanon can export water to Jordan (minute 33). Similar claims were made by Minister Gebran Bassil and Speaker of the Parliament Nabih Berri<sup>26,27</sup>. These recent statements contradict the National Water Sector Strategy, endorsed by the aforementioned local and international policy makers themselves, that claims Lebanon suffers from *water scarcity*.
- C. During an April 25, 2019 interview with TRT Channel<sup>28</sup>, the World Bank VP for MENA, Ferid Belhaj, reiterated a number of erroneous and false statements and claims regarding the project. Insisting that the Bisri Dam is a “zero risk” investment, Belhaj also claimed that the project garnered complete **consensus** both from professionals and average citizens. This could not be further from the truth. Despite his claim that “every single expert” in geology and seismology is in a consensus with the dam, many academics and professionals in the field not only contradict and contest it with well-documented evidence that highlights the dangers of the dam, but have been overwhelmingly outspoken against the Bisri Dam project in demonstrations, at discussions, namely the last held at Issam Fares Institute in March, and in their personal scholarship. They have stood alongside citizen stakeholders, joining the campaign to protect Bisri Valley from all areas and corners of Lebanon to stop the project that will ensure the destruction of the environment and the livelihood of Bisri’s residents. Belhaj also made false statements claiming the lack of viable alternatives, stating in the interview that “*We’ve been talking to people and asking them to come up with alternatives, and frankly none of them can hold water*”, despite the well-documented presence of viable and ecologically conscious alternatives.

## VIII. Previous Dialogue and Complaints

- After the Panel’s first recommendation, we initiated a series of meetings with members of Parliament representing different parties (MPs Ziad Assouad, Paula Yacoubian, Nazih Najem, Ibrahim Azar, Oussama Saada, Salim Khoury, Farid El Khazen, Ziad Hawat, Samy Gemayel, Elias Hankash, Taymour Jounblat, Alain Aoun, and others).

---

<sup>25</sup> <https://www.facebook.com/aub.ifi/videos/544517059403070/>

<sup>26</sup> <https://www.annahar.com/article/926639>

<sup>27</sup> <https://www.lebanondebate.com/news/424731>

<sup>28</sup> <https://www.youtube.com/watch?v=rxkxnJWLWBE&t=409s>

- We met with the Bank Staff on March 29<sup>th</sup>, 2019 and we discussed the issues detailed in this request. The Bank team promised to conduct four different expert meetings to discuss the topics. Unfortunately, none of the meetings were held as promised by the Bank, and when we tried to follow up, the Bank expressed a preference for having the borrower present in the meetings (See correspondence in Annex X). However, the borrower has never been ready to communicate with us.
- During the visit of the World Bank’s Vice President for MENA in March, he said that “*If opponents have an alternative solution, please put forward*”<sup>29</sup>, disregarding all the previous dialogue and the alternative solutions we presented. Meanwhile, he continued to publicly advertise the project with false statements as explained earlier.
- On April 4<sup>th</sup>, 2019, the General Secretariat of the Parliament, in cooperation with the Committee of Public Works, Transport, Energy and Water, organized a seminar on the Bisri Dam, where our experts confronted CDR’s with evidence and proofs. The Parliament recommended that CDR must provide and publish the geological and financial studies and to consider alternative solutions for water<sup>30</sup>.

Unfortunately, CDR has not published the studies until a few days ago claiming that they did not receive an official request from the Parliament, though CDR attended the seminar. **Meanwhile, some of the recommendations were suddenly deleted from the Parliament’s official website**<sup>31,32</sup>.

On June 14<sup>th</sup>, 2019, CDR finally published some studies on its website. While we can already identify many discrepancies and gaps in these documents, we will send the Panel detailed comments on the material soon.

- Despite the World Bank team’s promise to hold meetings with all the concerned parties, the Bank held a separate meeting with the Committee of Public Works, Transport, Energy and Water on May 23<sup>rd</sup>, 2019, excluding the members of the Civil Society. During the meeting, the Regional World Bank director, Saroj Kumar, stated that he’s an expert in Dams and that he assures the Committee that no dangers can result from the project<sup>33</sup>, though Kumar was not in a position to give an expert’s evaluation or judgement. In fact, during our meeting with him on March 29<sup>th</sup>, he promised to meet with our experts in Geology and Seismology to better understand the issue, but has not yet reached out.

<sup>29</sup> <https://www.elnashra.com/news/show/1297832>

<sup>30</sup> <http://nna-leb.gov.lb/ar/show-news/401698/nna-leb.gov.lb/ar>

<sup>31</sup> [www.lp.gov.lb/ContentRecordDetails.aspx?id=29288&title=ندوة-حوار-حول-مشروع-سد-بصري-بين-الواقع-والهواجس](http://www.lp.gov.lb/ContentRecordDetails.aspx?id=29288&title=ندوة-حوار-حول-مشروع-سد-بصري-بين-الواقع-والهواجس)

<sup>32</sup> <https://al-akhbar.com/Community/270950>

<sup>33</sup> <https://www.lp.gov.lb/ContentRecordDetails.aspx?id=29442>



- The Order of Engineers invited all concerned parties to a public debate about the Bisri Dam on April 17th. However, CDR refused to attend, and the debate was consequently cancelled. Also, the President of the Order of Engineers released a statement condemning the exclusion of the Order from the scientific debates about the Dam in Lebanon<sup>34</sup>.

## IX. Increased Violence

The excessive use of force by the Government against the local communities and activists is alarming. On June 9th, 2019, five men ambushed and beat the Coordinator of the Save the Bisri Valley Campaign, [REDACTED], while he was leading a tour of the area, with one attacker biting off a part of his left ear<sup>35</sup>. In fact, some of the assailants were connected with the Council for Development and Reconstruction, the government-affiliated body that is overseeing the Bisri Dam project. This incidence is part of a series of oppression exercised against activists and locals.

Moreover, the Government is responding to the local communities' peaceful, nonviolent protests with an exaggerated use of armed forces<sup>36</sup>. Hundreds of military members, anti-riot police, and private security forces, are being mobilized. Some landowners and farmers are banned from accessing their lands only because they are participating in the protests. Others are threatened of being expelled from their jobs in governmental institutions for the very same reason.

During the Lebanese Civil War (1975-1990) the valley was a demarcation line between the two communities in conflict. **Today, the project may ignite old rivalry between the two sides of the valley as it triggers feelings of oppression and injustice with the deterioration of livelihoods and the loss of access to lands and properties<sup>37</sup>.**

---

<sup>34</sup> <http://www.oea.org.lb/Arabic/NewsDetails.aspx?pageid=6142>

<sup>35</sup> <http://www.dailystar.com.lb/News/Lebanon-News/2019/Jun-18/485486-aub-faculty-members-slam-bisri-attack.ashx>

<sup>36</sup> <https://globalvoices.org/2019/04/13/inside-the-lebanese-campaign-to-stop-a-world-bank-funded-dam-project/>

<sup>37</sup> <https://www.facebook.com/BisriValley/videos/2337997869803346/>

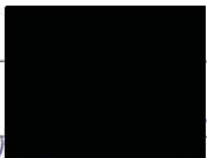

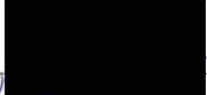
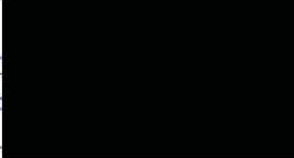

## X. Appeal

We ask the Inspection Panel to use all the expertise to investigate the reported violations, based on the regulations included in this request, but also on other regulations the Panel considers relevant.

We understand that some of the project's proceeds have been disbursed, mainly on expropriation. However, the costs of construction, operation and maintenance, added to the risks of earthquakes, the indirect displacement of local communities, the irreversible destruction of the riparian ecosystem, the loss of forests and agricultural land, the dismantling of archaeological sites, and the diminishing of land value downstream, all outweigh any potential benefit from pursuing the ill-advised dam, especially that better and cheaper alternatives exist.

It is therefore important to turn this issue into a major opportunity for Lebanon and the region's environmental and historical heritage, to make another use of the country's resources and to envision a sustainable water management plan for the Greater Beirut Area.

As advised in your Operating Procedures, this Request for Inspection is brief. We can provide you with more details if needed. We thank you and we look forward to your response.

DATE: 24/6/2019    
SIGNATURE:     
CONTACT ADDRESS:  Lebanon   
Attachments:  [Yes]  [No]

We authorize you to make this Request public  [Yes]  [No]

We want the attached locals' signatures to remain anonymous  [Yes]  [No]

## The below listed Annexes are available upon request

### Annexes:

- A. Bisri dam project from the geological and seismological perspectives (Nemer, 2018)
- B. Regarding the reservoir induced seismicity effect of the Bisri dam (Nemer, 2018)
- C. Extract from Bank Management Response (Inspection Panel, 2018)
- D. ICOLD bulletin 137
- E. Neotectonic & Seismic Sources for the Bisri Dam site (Elias, 2014)
- F. Earthquake Hazard of the Bisri dam (Erdik et al., 2014)
- G. Biodiversity Action Plan (Dar, 2014)
- H. Decree 8633 on EIA
- I. Hazards to Groundwater and Assessment of Pollution Risk in the Jeita Spring Catchment (BGR and CDR, 2013)
- J. Protection of Jeita Spring: Overview of Project Results (BGR, 2014)
- K. Data Synthesis & Basin Water Resources Characterization Report: Water Budget and Safe Yield (UNDP, 2013)
- L. Extracts (1) from the Assessment of the Groundwater Resources of Lebanon (UNDP, 2014)
- M. Extracts (2) and comments on the Assessment of the Groundwater Resources of Lebanon (UNDP, 2014)
- N. Maps of Rainfall, Springs, and Wells in the GBML
- O. Jeita Spring Protection Project, Phase I: Feasibility Study (Gitect and BGR, 2011)
- P. Data Synthesis & Basin Water Resources Characterization Report: Artificial Recharge (UNDP, 2013)
- Q. Water Supply in the Jeita Catchment & for Beirut (BGR, 2012)
- R. Water Quality Note 1 (World Bank, 2018)
- S. Comments of the Litani River Authority (Al-Akhbar, 2018)
- T. Extracts from the Strategic Environmental Assessment of the NWSS (Ecodit, 2015)
- U. Extracts from the GBWSP's EIA (CDR, 2010)
- V. Bisri Dam brochure (World Bank, 2018)
- W. Bisri Dam Advertisement (World Bank and CDR, 2018)
- X. Email correspondence with Bank Management
- Y. Petition:
  - a. Lebanon Eco Movement (LEM) profile
  - b. Online petition

### Subsequent submission:

- Letter by four members of Parliament, dated August 5, 2019
- Open letter by 15 international and regional civil society organizations
- The Bisri dam project: A dam on the seismogenic Roum fault, Lebanon (Nemer, 2019)

# Petition

**To:** The World Bank's Inspection Panel

**Subject:** Request to withdraw the funding for the Bisri Dam

We, the undersigned, authorize Lebanon Eco Movement to represent our concerns regarding the Bisri Dam Project. We are against the funding of this project because of its catastrophic impacts on our safety, environment, cultural heritage, and livelihood.

Name	City/Village	Signature
[Redacted content]		

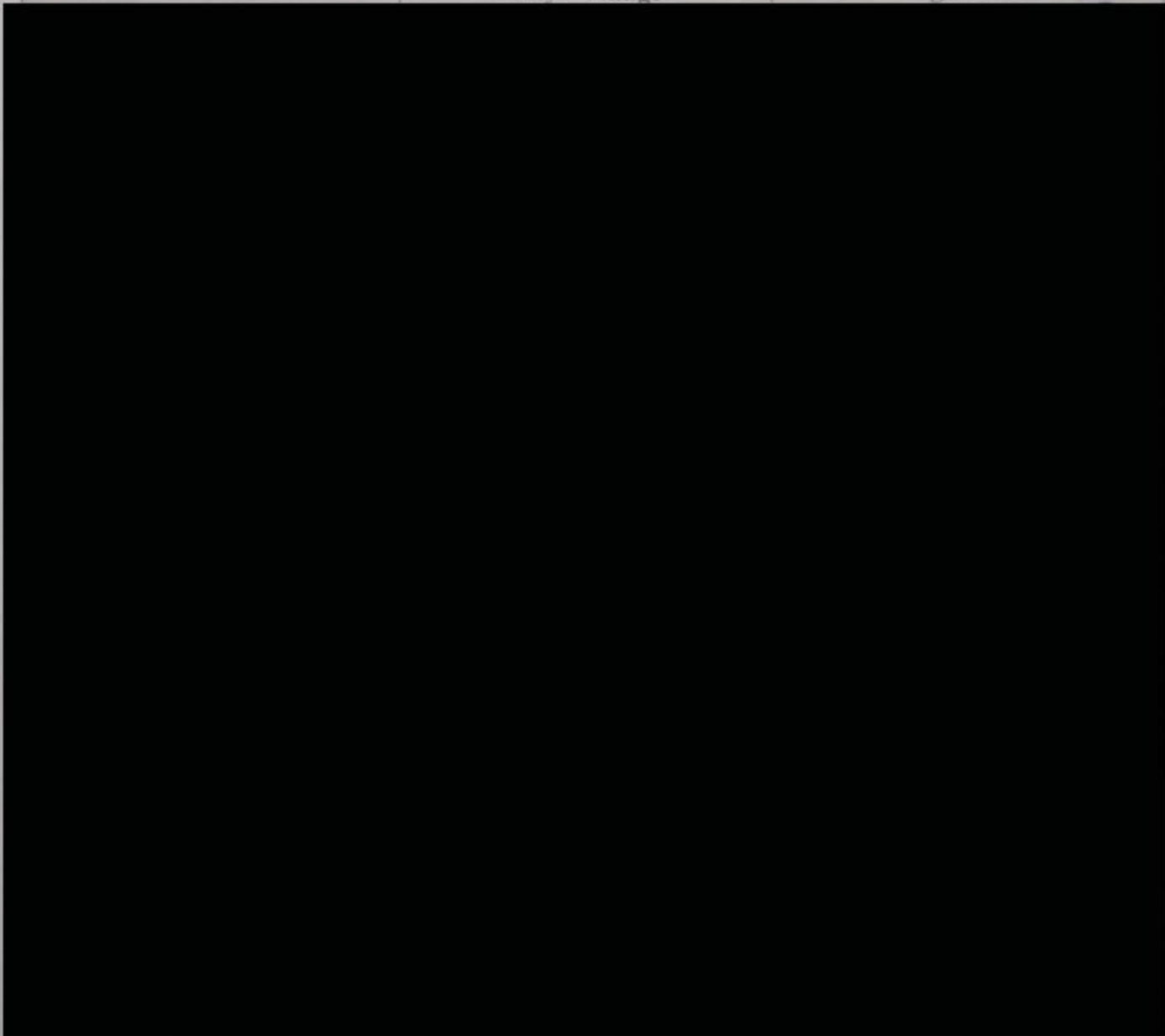
## Petition

**To:** The World Bank's Inspection Panel

**Subject:** Request to withdraw the funding for the Bisri Dam

We, the undersigned, authorize Lebanon Eco Movement to represent our concerns regarding the Bisri Dam Project. We are against the funding of this project because of its catastrophic impacts on our safety, environment, cultural heritage, and livelihood.

Name	City / Village	Signature
------	----------------	-----------



## Petition

**To:** The World Bank's Inspection Panel

**Subject:** Request to withdraw the funding for the Bisri Dam

We, the undersigned, authorize Lebanon Eco Movement to represent our concerns regarding the Bisri Dam Project. We are against the funding of this project because of its catastrophic impacts on our safety, environment, cultural heritage, and livelihood.

Name	City/Village	Signature
------	--------------	-----------



1

# Petition

**To:** The World Bank's Inspection Panel

**Subject:** Request to withdraw the funding for the Bisri Dam

We, the undersigned, authorize Lebanon Eco Movement to represent our concerns regarding the Bisri Dam Project. We are against the funding of this project because of its catastrophic impacts on our safety, environment, cultural heritage, and livelihood.

Name	City/Village	Signature
------	--------------	-----------



# Petition

**To:** The World Bank's Inspection Panel

**Subject:** Request to withdraw the funding for the Bisri Dam

We, the undersigned, authorize Lebanon Eco Movement to represent our concerns regarding the Bisri Dam Project. We are against the funding of this project because of its catastrophic impacts on our safety, environment, cultural heritage, and livelihood.

Name	City / Village	Signature
------	----------------	-----------





Name	City/Village	Signature
------	--------------	-----------






June 29<sup>th</sup>, 2019

To: Executive Secretary, the Inspection Panel  
1818 H Street NW, MSN 10 - 1007, Washington, DC 20433, USA

## REQUEST FOR AN INSPECTION ON THE IMPACTS OF THE BISRI DAM PROJECT IN LEBANON

### II. Earthquake Threats (Part 2):

*“In case that a capable fault with documented late Quaternary activity crosses the dam site, the best advice is to select another site, not exposed to such kind of hazard”.*

ICOLD Bulletin 137, p.59

On June 14<sup>th</sup>, following the continued pressure from local communities, activists, and members of Parliament, CDR finally published the long-awaited studies - mostly related to the geological and seismological aspects of the project - that were hidden from the public since 2014. However, in an attempt to divert attention away from the content of the studies, CDR released a statement reiterating the denial of the existence of an active seismic fault under the project’s site (see CDR statement attached).

All previous geological and seismological reports conducted by local and international firms (Dar Al-Handasa Nazih and Taleb, Dar Al-Handasa Shair and Partners, NOVEC, ECI, and others) in addition to the reports by Dr. Tony Nemer from the American University of Beirut, confirmed the existence of an active fault under the Bisri Dam site. **Paradoxically, only the reports conducted lately by CDR (the borrower) claim the opposite, without providing any scientific explanation for the new, unfounded claim.**

Among the reports that confirm the presence of the fault:

1. Report 7, p.9 (Dar al Handasa and NOVEC): *“Among the faults that affect the site of the dam is a main fault distinguished by the importance of its vertical discharge of hundreds of meters. The fault passes at the foot of the left bank. This major fault was considered during previous dam studies as a segment of the Roum Fault. A resumption of seismotectonic studies, conducted as part of this update of the preliminary draft, concluded the passage of the Roum fault outside the dam site. **It attributed the major fault identified in the riverbed of Bisri to a tectonic activity different from that of the other active faults in Lebanon”.***

The map in report 7, p.60 (Dar al Handasa and NOVEC) clearly shows that **a major fault passes under the dam site.**

Report 7, p.11 (Dar al Handasa and NOVEC): *“The configuration of the main fault of the site is deduced from **the interpretation of geological survey data”.***

The cross section in Report 7, p.64-65 (Dar al Handasa and NOVEC) also shows the main fault under the dam site.

The aforementioned maps and sections are documented and accepted in the reports 5, 6, 7, 8, 9, 10, 11, 12, 13, 18, 25, 26, 32, and 35. **Only the reports 3 and 4, conducted by Ata Elias and Mustafa Erdik for CDR, have different claims.**

2. Report 32, p.70-71 refers to a study conducted by ECI. The study shows **that the Roum Fault (or a ramification of it) passes underneath the dam site**, contrary to the claims of CDR.
3. Report 36, p.2 refers to a technical note by Prof. Antonio Gens stating the following: *“Bisri Dam is sited in a highly seismic zone; it is of interest, therefore, to assess the potential for liquefaction of the foundation soil”*.
4. Report 31, p.169 states that *“the geological structure at Bisri comprises a complex interaction of faults, folds and mass movements. [...] Two major faults pass close to the dam axis, the Roum Fault and the Qalaat el Hambra Fault”* (another nomenclature of the Bisri Fault).

The report continues to say: *“Boreholes along the dam axis encountered a succession of older beds of J5-J7 abruptly displaced against the C2a, for which the Jurassic succession must have been uplifted along a major fault. The report interprets this fault to be the subsurface extension of the Roum Fault”*.

Report 31, p.171: *“The closest surface expression of the Roum Fault is about 2Km SW of the dam site, but its subsurface trace or an offshoot of it appears to continue into the Awali valley and beneath the proposed dam site”*.

Report 31, p.172: *“That the Roum Fault, known to be significantly active, may pass under the dam and reservoir site presents a major risk to the viability of the Bisri project”*.

Report 31, p.269: *“Disadvantages: High seismic risk”*.

5. Report 32, p.55: *“The closest surface trace of the Roum Fault to the Bisri dam site is located about 2 km southwest of the dam site. However, it appears that the fault continues within the Bisri River Valley (covered by alluvial deposits) to the vicinity of proposed dam axis. [...] Most of the faults within the project area are considered to be active”*.

Report 32, p.56: *“A major risk is stated in the report (R2) whereby the Roum Fault and/or other associated faults pass under the dam axes. Roum Fault is a highly active fault and the source of earthquakes. The occurrence of such a fault under the dam axis, if proven, places a severe constraint on the dam feasibility and a high risk on downstream developments in case of dam rupture”*.

*Report 32, p.56: “The reservoir area as observed during our site visit is characterized by block tectonics rendering the prediction of **the hydrogeological regime under water load very complex and with high degree of uncertainty**”.*

**Now that the existence of the Bisri Fault is confirmed, is the fault active?**

6. Report 14, p.8 shows refractions in the layers under the riverbed, which is a proof that the fault is active.
7. In the report 4, p.12 (by Ata Elias of CDR), the existence of geological terraces is not explained. In fact, **these terraces are the result of the layers moving upwards (poster 9) and the river moving downwards. This is an additional proof that the fault is indeed active.**

Atta Elias refuted all the conclusions in the aforementioned reports and studies regarding the existence of an active seismic fault under the Bisri River. Mustafa Erdik, also working for CDR and more recently for the Dam Safety Panel, approved Elias’ unfounded statements. They both dismissed tens of documented scientific evidence.

As explained earlier, we had expressed our concerns regarding the dam’s risks of RTS to the different authorities, especially that more than 35,000 people live near the Dam and Reservoir area, while the impact of an induced earthquake can reach far beyond the project’s direct vicinity, affecting other cities and hundreds of thousands of inhabitants. Unfortunately, the answers provided by the Bank and CDR were either that the **Bisri Fault does not exist (!)**, or that **it is not active (!)**, both claims being inaccurate.

**Considering the serious violation of the international standards, and given CDR’s manipulation and concealment of evidence regarding the dam’s siting on an active seismic fault, in addition to the false interpretations of the ICOLD Bulletin 137, we ask the World Bank’s Inspection Panel to take the necessary action to protect the Lebanese citizens against the catastrophic threats this dam poses to Lebanon.**