

**Report No. 63640-CL**

**The Inspection Panel** 

**Final Report and Recommendation**

**CHILE: Quilleco Hydropower Project  
(Trust Fund No. TF056272-CL)**

**August 31, 2011**

**The Inspection Panel**

**Final Report and Recommendation**

**On**

**Request for Inspection**

**CHILE: Quilleco Hydropower Project (Trust Fund No. TF056272-CL)**

1. On April 21, 2010, the Panel received a Request for Inspection, which was complemented by clarifications received on May 26, 2010 (hereinafter the “Request”).<sup>1</sup> The Request was submitted by residents of Tucapel, Santa Bárbara, Ralco Lepoy, and Concepción (hereinafter the “Requesters”) in the Biobío region of Chile. The Requesters asked in their correspondences that the Panel keep their names confidential. The Panel registered the Request on June 18, 2010.
2. The Request alleges harm caused by a number of existing or proposed hydropower projects in the Biobío basin known as the Angostura project, the Quilleco project, the Pangué/Ralco projects, and the Laja project.<sup>2</sup> Currently, only the Quilleco project (hereinafter, the “Project” or the “Quilleco Project”) is supported by the IBRD, and thus is within the Panel’s purview.
3. The Management Response to the Request, dated July 20, 2010 (hereinafter, the “Management Response”)<sup>3</sup> stated that the Bank “*is not and has no plans to become involved in the Angostura project.*” The Panel, in its Eligibility Report dated August 23, 2010, stated that it could not identify any IBRD support for this project. The Panel, therefore, did not look into allegations relating to the Angostura Project nor to the Pangué, Ralco and Laja projects, which were also not eligible pursuant to the provisions of the Resolution that established the Inspection Panel.<sup>4</sup>

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<sup>1</sup> The Request, Management Response, Panel Reports, and all related documents, are available at: <http://web.worldbank.org/WBSITE/EXTERNAL/EXTINSPECTIONPANEL/0,,contentMDK:22622979~pagePK:64129751~piPK:64128378~theSitePK:380794,00.html>.

<sup>2</sup> The Requesters correspondence also refers to the alleged negative effects of the Chacabucito and Hornitos Hydroelectric projects in the Aconcagua river basin, but they do not make any specific allegations of material harm affecting them.

<sup>3</sup> Management Response to Request for Inspection Panel Review of the Chile: Quilleco Hydropower Project (Trust Fund No. TF056272-CL) and Laja Hydroelectric Project, July 20, 2010, p. 34, para 102 (hereinafter the “Management Response”)

<sup>4</sup> Resolution of the Board of Executive Directors of IBRD No. 93-10, dated September 22, 1993 (hereinafter, the “Resolution”).

4. On July 20, 2010, the Panel received the Management Response. Subsequently, the Panel received an Addendum to the Management Response dated August 20, 2010<sup>5</sup>, outlining a set of proposed additional actions to be carried out by Management in response to the concerns raised in the Request. These actions included conducting a study on the impact of the Quilleco water diversion on the local hydrology and geohydrology, and a study of the consequences, if any, of the availability of water to the agricultural and livestock activities of the local population living in the project area in the Laja Valley<sup>6</sup>, and on the basis of such analysis, to explore potential follow-up actions. These studies and subsequent explorations were expected to be completed within six months (i.e., by late February 2011); at the end of this six-month period, Management would “report back to the Board on the results of these actions and the need for potential additional steps, if any.”<sup>7</sup>
5. On August 23, 2010, the Panel submitted its Eligibility Report and Recommendation to the Executive Directors and, at that time, refrained from making a recommendation on whether an investigation was warranted. The Panel stated in its Report that Management’s approach in responding to the grievances of the Requesters through a “set of proposed actions” was positive.<sup>8</sup> Taking into account this positive approach, the Panel stated that it expected to be able to make a determination by May 31, 2011, as to whether an investigation would be warranted.<sup>9</sup> The Panel considered, in its Report, that such a period would give “further time to determine if the issues and concerns raised by the Request can be addressed by the proposed actions and the ensuing dialogue among the affected and interested parties.”<sup>10</sup> The Board approved the Panel’s Eligibility Report and Recommendation on September 7, 2010.
6. On April 12, 2011, Management submitted a Progress Report on the Implementation of the Management Actions in Response to the Request for Inspection to the Board of Executive Directors (hereinafter the “Management Progress Report”). The Management Progress Report described the actions Management undertook to address the concerns raised by the Requesters and provided details on the two studies commissioned by Management, which are publicly available.
7. The purpose of the present Panel Final Report and Recommendation is to convey the Panel’s determination on whether Management’s progress on its proposed actions was adequate to ensure Management’s compliance with applicable operational policies and procedures, and on whether an investigation into the allegations of non-compliance and harm concerning the Project is warranted. The Request has already been determined eligible in the previous Panel

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<sup>5</sup> Addendum to Management Response to Request for Inspection Panel Review of the Chile: Quilleco Hydropower Project (Trust Fund No. TF056272-CL) and Laja Hydroelectric Project, August 23, 2010 (hereinafter the “Addendum to Management Response”).

<sup>6</sup> See Addendum to Management Response, p. 2, para 3.

<sup>7</sup> Addendum to Management Response, p. 2, para 4.

<sup>8</sup> See *Management Response*, p. 34, para 102 See also *Addendum to Management Response*”).

<sup>9</sup> *Inspection Panel Report and Recommendation, Chile: Quilleco Hydropower Project*, dated August 23, 2010 (hereinafter the “Eligibility Report”), p. 16, para 76. Management Progress Report was received by the Panel on April 12, 2011, rather than in late February as expected. The Panel therefore adjusted the timeline for issuing its Final Report and Recommendation.

<sup>10</sup> Panel Report and Recommendation, p. 16, para 76.

Report and Recommendation, as per the Resolution, and Paragraph 9 of the 1999 Clarifications guiding the Panel's operations,<sup>11</sup> and, as indicated earlier, the Panel's Report and Recommendation was approved by the Board of Executive Directors.

## **A. THE PROJECT**

8. According to the Project Appraisal Document (PAD), the objective of the Bank's assistance is to provide financial support for private investment projects in the Chilean power sector that reduce global greenhouse gas emissions, thereby generating Certified Emission Reductions (CERs), under the Clean Development Mechanism of the Kyoto Protocol to the UN Framework Convention on Climate Change.
9. The Project consists of a 70 Megawatts (MW) run-of-river hydropower plant, located on the Laja River downstream of the existing Rucúe hydropower plant (160 MW). The Quilleco Hydropower Project is designed for a water flow of 130m<sup>3</sup>/s taken from the water discharged from the Rucúe plant. The Project is intended to generate on average about 422 Gigawatt hours (GWh) per year, with a firm power capacity of approximately 47 MW. Construction on the Project began in January 2005, and the Project became operational in April 2007.
10. Project performance is monitored as per a Monitoring Plan referred to in the Emission Reductions Purchasing Agreement (ERPA)<sup>12</sup> and evaluated on the basis of generating the expected amount of emissions reductions (ERs) and subsequent issuance of CERs. Monitoring the generation of ERs is implicit in the Project as a function of electricity generation.

## **B. FINANCING**

11. On May 31, 2006, the Bank approved a CERs purchase on behalf of the Netherlands Clean Development Mechanism Facility (NCDMF). The expected closing date for the ERPA is December 31, 2012. The Project was built and is operated by Colbún S.A. According to Management, the ERPA became effective on April 27, 2006.
12. Under the provisions of the ERPA, the NCDMF will purchase 100,000 tCO<sub>2</sub>e (tons of carbon dioxide equivalent) of CERs each year between 2008 and 2011, at a price of Euros 6/tCO<sub>2</sub>e, representing about US\$3.0 million in total purchases. Additional CERs produced by the Project (an estimated 100,000 tCO<sub>2</sub>e per year between 2008 and 2011) are to be retained by the firm Tractebel – one of Colbún's shareholders.

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<sup>11</sup> Panel Report and Recommendation, para 74.

<sup>12</sup> See *IBRD – Netherlands Clean Development Mechanism Facility Emission Reductions Purchase Agreement (Chile, Quilleco Hydroelectric Project) between Hidroelectrica Guardia Vieja S.A. and International Bank for Reconstruction and Development, as Trustee of the IBRD - Netherlands Clean Development Mechanism Facility*, dated April 27, 2006 (hereinafter, the "ERPA").

### C. THE REQUEST

13. As mentioned above, the Request was submitted by residents of Tucapel, Santa Bárbara, Ralco Lepoy, and Concepción in the Biobío region of Chile. The Request alleges harm caused by a number of existing or proposed hydropower projects in the Biobío basin, including the Quilleco project, though currently only the Quilleco project is supported by the IBRD, and thus is within the Panel's purview.
14. The Requesters stated that the region where they live has been and will be negatively impacted by Bank-supported hydroelectric projects. The Requesters stated that the developers and operators of the Project should comply with Bank environmental and social standards. The Requesters added that the Quilleco Project is the third arrangement between Hidroeléctrica Guardia Vieja, a subsidiary of Colbún, and the Bank. The Requesters expressed their concern on the way Colbún is handling the Environmental Assessments and community relations in the region, which, according to them, disregard the rights of indigenous people and international commitments made by the World Bank Group. The Requesters stated that they had asked the Bank's Country Office for documentation regarding the Quilleco project. The Requesters consider that although the response was prompt and they received many documents, the response did not satisfy them.<sup>13</sup>
15. As noted in the Panel's earlier Report, the concerns of the communities in the Valle del Laja affected by the Quilleco Project relate to what they view as the drying up of the area in which they live and on which their livelihoods depend. The communities alleged that the diversion of water from the Laja River for the operation of the Quilleco plant had directly affected them by significantly reducing the availability of water from the affected stretch of the River for their agricultural and livestock use. The affected sector of the River is between the point where water was originally returned to the river by the Rucúe hydropower plant and the point where water is now discharged back into the river from the Quilleco power plant, which uses water released by the Rucúe plant.
16. According to the communities, as a result of this water reduction, agricultural production suffered and their livestock dwindled, which in turn, had directly affected their livelihoods and incomes.<sup>14</sup> The affected communities also claimed that the reduced flow of water in the river had a negative impact on their wells, whose levels dropped considerably or dried up. They also claimed that decreased water and the cumulative impacts of the Rucúe and Quilleco projects had negatively affected native flora and fauna (especially fish) and that they did not receive any benefits from the Project.<sup>15</sup>

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<sup>13</sup> The Requesters have previously expressed concerns to Bank Management and Colbún about issues relating to the projects, including the Quilleco Project, over a long period of time, including in meetings noted in the Bank Management Response between 2004 and 2006 and in a December 2008 letter sent to the President of the World Bank and the Executive Vice President of IFC.

<sup>14</sup> See Request for Inspection: Chile-Quilleco Hydropower Project

<sup>15</sup> Panel Report and Recommendation, p. 14, para 66.

17. The Requesters asked that the Panel recommend an investigation, stating that the actions of the developers and operators of the hydroelectric projects in the Biobío are impeding Bank commitments from being implemented and are leading to harm to local communities.

#### **D. MANAGEMENT RESPONSE**

18. With regard to the Quilleco Hydropower Project, Management stated in its Response that this “*is the only project referred to in the Request that raises claims of adverse impacts and also involves IBRD.*”<sup>16</sup>

19. Management stated that the cumulative impact assessment carried out for the Quilleco and Rucúe projects was appropriate to the nature and scale of the project investments. Management also stated that appropriate methodology has been used since 1999 to monitor the cumulative effects of the Rucúe and Quilleco projects, and that the monitoring data have shown that the Minimum Ecological Flow<sup>17</sup> designated initially for the Rucúe project and subsequently for the Quilleco project has been able to maintain the diversity of aquatic habitats and fish species within the area of influence as determined by the Chilean National Environmental Commission.<sup>18</sup>

20. Management also stated that it believes that the Environmental Assessment Policy (OP 4.01) was applied appropriately and that the environmental impact assessment (EIA) and subsequent independent evaluations were consistent with the requirements of this policy as defined for Category B environmental risk projects.<sup>19</sup> Furthermore, according to Management, the Natural Habitats Policy (OP 4.04) was applied appropriately with regard to the importance of the possible aquatic habitat impacts and the presence of important and endangered fish species.<sup>20</sup>

21. With regard to the consultations and issues of groundwater and water resources, Management stated that the consultation process, in the context of the EIA, offered communities in both Quilleco and Tucapel adequate opportunities to express their views and concerns on the Quilleco project, and that their concerns were addressed at different stages of the Project.<sup>21</sup>

22. While addressing other concerns raised by the Requesters, Management stated that the policies on Cultural Property (OPN 11.03),<sup>22</sup> Indigenous Peoples (OD 4.20),<sup>23</sup> and

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<sup>16</sup> Management Response, Executive Summary, p. v, para ii.

<sup>17</sup> *Minimum Ecological or Environmental Flows* describe the quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems (Brisbane Declaration, 2007), available at

<http://www.eflownet.org/viewinfo.cfm?linkcategoryid=4&linkid=64&siteid=1&FuseAction=display>

<sup>18</sup> Management Response, p. 29, para 82.

<sup>19</sup> Management Response, p. 31, para 87.

<sup>20</sup> Management Response, p. 31-32, para 90.

<sup>21</sup> Management Response, p. 30, para 84.

<sup>22</sup> Management Response, p. 32, para 91.

<sup>23</sup> Management Response, p. 32, para 94.

Involuntary Resettlement (OP/BP 4.12)<sup>24</sup> were applied appropriately in relation to the Quilleco project. With regard to cultural property, Management stated that as part of the EIA, a survey of important physical cultural resources was carried out and the findings documented in the baseline studies.<sup>25</sup>

23. Regarding supervision, Management stated that the Bank had conducted numerous supervision missions, including site visits and meetings with the Project sponsor. Five separate supervision missions are mentioned in the Management Response, and Management states that *“no significant issues were identified but water availability and well levels were still identified as concerns on the part of Valle del Laja community.”*<sup>26</sup> The Response further added that Management *“will continue to supervise the Project, including evaluating any potential concerns of affected populations”* and that it *“will continue to exchange information with Requesters through the ongoing correspondence between them and Bank staff.”*<sup>27</sup>
24. As mentioned earlier, the Addendum to the Management Response, prepared after discussions with the Inspection Panel, described a series of additional actions that Management intended to carry out in order to address the Requesters’ concerns. Management stated that it *“understands from discussions with the Inspection Panel that the concerns regarding water availability have crystallized around the potential impact of the Quilleco plant,”* and that *“Members of the Laja community have expressed concerns to the Inspection Panel that they believe that the Quilleco project is adversely affecting water availability.”*<sup>28</sup>
25. In order to address the issues raised by the Requesters, Management proposed additional actions. Management expressed its commitment to *“analyze as a first step the impact of the Quilleco diversion on the local hydrology and geohydrology, and, as a second step, the consequences, if any, on the availability of water to the agricultural and livestock activities of the local population living in the project area.”* Furthermore, on the basis of the results of this analysis, Management proposed to explore potential follow-up actions. Management stated that this analysis and follow-up would take no longer than 6 months.<sup>29</sup> The Addendum stated that Management would report back to the Board on the results of the proposed studies and the need for additional actions by Management, if necessary.
26. The Addendum to the Management Response also indicated that the Bank team would *“continue to work with Colbun to enhance its outreach to the local population living in the project area to strengthen the ability of all stakeholders in properly identifying, understanding and addressing the impacts of the Quilleco plant”*.

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<sup>24</sup> Management Response, p. 33, para 98.

<sup>25</sup> Management Response, p. 32, para 91.

<sup>26</sup> Management Response, p. 27, para 74.

<sup>27</sup> Management Response, p. 34, para 102.

<sup>28</sup> Addendum to Management Response, p. 1, para 2.

<sup>29</sup> Addendum to Management Response, p. 1, para 3.

## E. MANAGEMENT PROGRESS REPORT

27. On April 12, 2011, Management submitted its Progress Report to update the Board on the actions undertaken by Management to address the Requesters' concerns that relate to the Project. The Progress Report described the ongoing communication and engagement with the affected community, compliance with the Bank's Policy on Safety of Dams, and the results of studies related to hydrology and hydrogeology and the impact on livelihoods in the affected area.<sup>30</sup>
28. The Progress Report emphasized that Management's main objective has been to enhance Colbún's ability to communicate and interact with the affected community. According to Management, with technical and advisory assistance from the World Bank, Colbún has significantly enhanced and broadened its strategy toward strengthening dialogue in the vicinity of all 23 of its active power plants nationwide.<sup>31</sup> In addition, Colbún is training its managers and field staff in community relations and communication. In line with this improved approach, Colbún recently created a Corporate Social Responsibility Management Unit, which aims to carry out a wide range of outreach and communication activities involving local authorities, communities, and other stakeholders.<sup>32</sup>
29. Management noted that Colbún's representatives had already met with the mayors of Quilleco, Antuco and Tucapel, and facilitated a site visit for 30 members of the Laja community in order to initiate a consultation process and establish better dialogue.<sup>33</sup> Management stated that it supports "*Colbún's idea to incorporate the community relations and communication function into the hydropower stations, in lieu of corporate headquarters, as the proximity to the communities provides the opportunity to strengthen dialogue and can increase the response speed to complaints or issues.*"<sup>34</sup> Management further stated that after the site visit by Laja community representatives, "*a small working group will be established, made up of four to five Community members and two to three Colbún staff.*"<sup>35</sup>
30. Management's Progress Report emphasized that it has continued to supervise the Project and to maintain contact with the Valle del Laja community, including with the Requesters. The Progress Report noted that two missions visited the site, in November 2010 and March 2011, to explain the studies and introduce the consultants who conducted the above referenced studies to the Laja community. Management stated that Colbún "*proposed a joint working group to collaboratively analyze future options and next steps*"<sup>36</sup>, while the Bank also initiated a number of meetings "*with Colbún and shared good practices on community*

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<sup>30</sup> Management Progress Report to the Board of Executive Directors on the Implementation of the Management Actions in Response to the Request for Inspection of the - Chile: Emissions Reduction Purchase Agreement offered to Colbún for the Quilleco Hydropower Project (Trust Fund No. TF056272-CL), dated April 12, 2011.

<sup>31</sup> Management Progress Report, p. 5, para 15.

<sup>32</sup> Management Progress Report, p. 5, para 16.

<sup>33</sup> Management Progress Report, p. 6, para 19.

<sup>34</sup> Management Progress Report, p. 5, para 17.

<sup>35</sup> Management Progress Report, p. 6, para 19.

<sup>36</sup> Management Progress Report, Executive Summary, para iii.



*relations in order to enhance the company's ability to listen to, communicate and interact with the Valle del Laja Community.*"<sup>37</sup>

31. Management emphasized its commitment to continue working with Colbún to enhance its communication and outreach to the communities and to ensure compliance with the social and environmental commitments in the ERPA.<sup>38</sup>
32. According to this Progress Report, Management undertook an analysis to determine the compliance of the Project with OP 4.37, Safety of Dams. The Progress Report stated that a *"supervision mission by the Bank's dam safety advisor determined that the Bank has satisfied the requirements of OP 4.37: (i) neither Quilleco nor Rucúe have structures that would require actions under OP 4.37, and (ii) the only structure requiring specific dam safety measures is located at the Antuco hydropower plant, and the dam safety measures being implemented by the owner, ENDESA (a Chilean energy company), with respect to the facility have been reviewed and are satisfactory."*<sup>39</sup>
33. The Progress Report<sup>40</sup> stated that Management undertook a study to re-examine whether the Quilleco Project *"has affected the hydrology and hydrogeology"*<sup>41</sup> *in areas surrounding the plant and, on that basis, to assess the impact on local communities (in part through a study on livelihoods*<sup>42</sup>*)"*. According to Management, this study indicates two key conclusions: (1) *"[t]here is no relationship between the construction or operation of the Quilleco plant and either the water flow in the springs or the supply of well water"*; and, (2) *"the construction and operation of the Quilleco plant have not had any discernable impact on the Community's agricultural and livestock activities."*<sup>43</sup>
34. **On the hydrology and hydrogeology in areas surrounding the plant**, Management stated that the study on hydrology/hydrogeology has two parts: (1) availability of water in wells and to supply the flows to springs; and (2) morphology, flow pattern and water availability of the Laja River.<sup>44</sup>
35. **With regard to springs and wells**, Management concluded that *"there is no relationship between the Laja River and the availability of surface and groundwater (i.e., water in springs and wells) in the Valle del Laja Community."* Noting that the Valle del Laja Community "is

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<sup>37</sup> Management Progress Report, Executive Summary, para iii.

<sup>38</sup> Management Progress Report, Executive Summary, para v.

<sup>39</sup> Management Progress Report, Executive Summary, para iv.

<sup>40</sup> Management Progress Report, See Executive Summary, p. ii.

<sup>41</sup> The study on hydrology and hydrogeology is entitled *"Proyecto Hidroeléctrico Quilleco, 'Consultoría Hidrogeológica Sector Río Laja en Confluencia con Río Rucúe' Informe Final"* (*"Quilleco Hydroelectric Project: Hydrogeologic Consultancy related to the area of Confluence of the Laja and Rucúe Rivers"*), José Francisco Muñoz and Pablo Rengifo Oyarce, March 2011.

<sup>42</sup> The study on livelihoods is entitled *"Informe por encargo del Banco Mundial: El uso del suelo en el sector Valle del Laja, Cambios en relación con la operación de la central Quilleco"* (*Report Commissioned by the World Bank: Land Use in the Laja Valley sector, Changes related to the operation of the Quilleco Power Plant*), Francisco Obreque, March 2011.

<sup>43</sup> Management Progress Report, p. 7, para 26.

<sup>44</sup> Management Progress Report, p. 7, para 27.

located on a plateau that slopes steeply towards the Laja River”, the Progress Report stated that the water for the Community “comes from an aquifer that is recharged by rainfall on the surface of a plateau about 100m above the Laja River floodplain”.<sup>45</sup> According to Management, this is consistent with the EIA report, dated 1998, for Quilleco, and its amendment in 1999. The Management Progress Report also noted that “rainwater drains from the plateau to the Laja River”, and that “changes in Laja River discharge have no way of impacting these flows”. Management noted that there are 19 wells on the plateau and two on the slopes, and that “the 19 wells on the plateau are recharged from the aquifer which is recharged from precipitation”.<sup>46</sup>

36. Management’s Progress Report concluded that “the reductions in the water level in the wells, if any, and the rate of flow in springs flowing off the face of the 100m high escarpment, are most likely explained by decreased rates of recharge from precipitation in the past few years.”<sup>47</sup> Management noted that in 2007, the year Quilleco began operating, and in 2010, the area had the lowest annual precipitation in the last decade and was “among the lowest eight percent for precipitation over the past 47 years.” Management also noted that, as in 2007 and 2010, there was also a “severe drought” in 1998 when Rucúe began operation.<sup>48</sup> Management further pointed out that an increasing demand for groundwater as well as changes in land use in the plateau could also have contributed to the reduction in the water levels in wells.

37. Overall, Management concluded that, based on available information and studies, there is “strong evidence that the source of groundwater flow is not related to the Laja River,” and that “additional analysis will most likely not lead to different conclusions.”<sup>49</sup>

38. **With regard to river morphology and flow pattern,** Management notes that, in the sector of the river in question, the water flows in multiple channels across a broad floodplain, and that one of the concerns of the local community is that “islands on the northern side of the floodplain, which they consider to be part of their farms, no longer support pasture or serve as locations to plant crops”. Management further notes that residents report that these islands “have been sterile in the past 10 to 15 years, characterized by sand and gravel rather than fertile soils”. Management concludes that “the results of the study indicate: (i) that Quilleco has not affected the river morphology; and (ii) that it has, over the distance of the Quilleco diversion, reduced the flow volumes to a limited extent (but, as indicated in the livelihood study..., this has not had any discernible impact on the Community)”.<sup>50</sup> Management cites “several lines of evidence for this conclusion”, noting that the study concludes that, while the Quilleco plant did not modify the river morphology in a detectable way”, it “could have affected the number of active channels because of the reduction in the flow.”

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<sup>45</sup> Management Progress Report, p. 8, para 28.

<sup>46</sup> Management Progress Report, p. 9, para 31.

<sup>47</sup> Management Progress Report, p. 10, para 32.

<sup>48</sup> Management Progress Report, p. 10, para 32.

<sup>49</sup> Management Progress Report, p. 10, para 34.

<sup>50</sup> Management Progress Report, p. 10, para 36.

39. **With respect to the impact of Quilleco on the livelihoods of the community**, Management concluded that, since the livelihood study indicated that water from springs was the main source of drinking water and irrigation for the community and the hydrology/hydrogeology study indicated that any changes in springs and wells were not related to the Quilleco Project, *“any livelihood impacts from changes in water availability from springs and wells are not the result of construction and operation of Quilleco.”* Management’s Progress Report further stated that *“with regard to the change in flow levels in the Laja River over the distance of the Quilleco diversion, the livelihood study indicates that no discernable impact on pasture areas or agricultural activities can be attributed to Quilleco”*. Management notes that *“[t]he livelihood study confirms that the Community has perceived a decline of pasture areas since 1999,”* which was before Quilleco began its operation. Furthermore, the study indicates that *“existing information does not support attributing any substantive impact to the Quilleco Project.”*<sup>51</sup>
40. **In sum**, Management concluded that the studies indicated that the Quilleco Project is not the cause of any changes in the springs, wells and river morphology, and that *“the only change attributable to Quilleco is in the river flow, that this change has been minor and that it has not affected local agricultural or livestock activities.”* Management believed that *“the Bank had made diligent efforts to apply its Policies and Procedures in the context of the Project and that the Requesters’ rights or interests have not been adversely affected, nor are they at risk of being adversely affected, by a failure of the Bank to implement its policies and procedures.”*<sup>52</sup>

## F. PANEL OBSERVATIONS

41. From July 18, 2011 to July 22, 2011, a Panel team led by the Panel Chairperson, Mr. Roberto Lenton, and consisting of Consultant and Advisor to the Panel, Mr. Eduardo Abbott, and Expert Consultant Mr. José Rafael Córdova<sup>53</sup>, hereinafter “The Expert”, visited the cities of Santiago, Concepción and Tucapel, the Project area, and the diversion dam for Rucúe. The Panel team met with the Requesters and other members of the affected communities, representatives of Government and Colbún, the experts commissioned by Management to conduct the studies relevant to the Project and cited in Management’s Progress Report, and a faculty member of the University of Concepción.
42. During its visit, the Panel team visited members of the Laja Valley community and their farms on the plateau and slopes above the Laja River, on its North bank. The Panel observed that the plateau slopes sharply down to the river (as noted also in the Management Report), and inspected some of the springs and small streams that flow off this plateau down to the river. From the plateau, the Panel team was able to see the sector of the river affected by the Quilleco diversion, i.e., the stretch between the point where the diverted water was originally returned to the river by the Rucúe plant and the point that water is now discharged back into the river from the Quilleco power plant. The Panel team observed that this stretch of river,

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<sup>51</sup> Management Progress Report, p. 15, para 45.

<sup>52</sup> Management Progress Report, p. 15, para 46 and 47.

the Laja Valley, has multiple channels flowing across the wide floodplain, and saw the islands in the floodplain that community members indicated were part of their farms, and which they said earlier supported livestock and crops but were now largely covered by sand and gravel.

43. The Panel notes that the concerns of the Laja Valley community fall into three categories: (1) those related to surface and groundwater availability in the springs and wells on the plateau and slopes above the Laja River; (2) those related to the water flow in the floodplain of the affected stretch of the Laja River itself; and (3) those related to the fertility of the islands in the floodplain, which community members consider to be part of their farms, and which therefore impacts their livelihoods.
44. The sub-section below summarizes the results of the Expert's analysis of the studies commissioned by Management and the links between the Quilleco Project and the concerns of the Laja Valley Community. This is followed by a sub-section with the Panel's observations, which draw on this analysis.

### **Analysis of the Panel's Expert**

45. The independent Expert retained by the Panel carried out an analysis of the two studies commissioned by Management, with a focus on assessing the links between the Quilleco Project and the concerns of the affected Laja Valley Community.
46. The Report of the Panel's Expert Consultant<sup>54</sup> notes at the outset that the water intake from the Laja River, running through a concrete channel that carries the water from the Rucúe dam first to the Rucúe and then the Quilleco Power Plants, was until 2007 returned to the Laja River **upstream** of the Laja Valley, but that since the Quilleco plant came into operation in 2007, it is returned to the river **downstream** of the Laja Valley. The main hydrological effect of the Quilleco Project therefore is to take away this water, which is never less than 50 m<sup>3</sup>/sec (during dry months), from this stretch of the river.
47. The Expert's report then examined the link between the Quilleco Project and each of the three main sets of concerns posed by the members of the affected Laja Valley Community, as summarized in paragraph 42 above.
48. **Availability of surface and groundwater (i.e., springs and wells) in the plateau and slopes above the Laja River.** The Expert examined the studies' analysis of the potential impact of the Project on four main permanent springs in the area, known as Bajada de Piedras, El Avellano, El Hoyón, and Vaca Muerta, which flow off the plateau towards the river. The Expert concurred with Management that this spring water comes from an aquifer that is recharged by rainfall on the surface of the plateau, about 100 m above the Laja River floodplain. According to the Expert, there seems to be no relationship between the Laja

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<sup>54</sup> "Review and Assessment of the Hydrologic and Hydraulic Impacts of the Quilleco Hydroelectric Project on the Laja Valley (Valle del Laja) - Laja River basin. Chile" by José Córdova, July 2011 (hereinafter the "Expert Report"), see Figure 3.1.

River and the availability of surface and groundwater (i.e. springs and wells) in the Laja Valley Community, and the changes in Laja River flows have no impact on these spring flows and well water levels. The Expert notes that this conclusion is consistent with the Environmental Impact Assessment prepared for Quilleco. The Expert further concurs with Management that the reductions of the water levels in the wells and of the water discharges in the springs is most likely the result of decreased rates of recharge from precipitation in the past few years; increases in the number of wells on the plateau; and/or changes in land use in the plateau.

49. **Water flow in the affected stretch of the Laja River.** The Expert examined the studies' analysis of water flows in the Laja River and concluded that the reduction of water flow in the stretch of the river affected by the Project, i.e., in the Laja Valley, is significant, and not "limited", as suggested in the Management Progress Report. The reasons for this conclusion, as noted by the Expert, include the fact that the recovery flows used in estimating the water flows in the affected stretch seem to be too high given the small size of the watershed in question, that the flow data in the Laja River<sup>55</sup> is based on estimates of water flow and irrigation diversions that are not reliable, and that the amount of water diverted away from this stretch of the Laja River to the power plant since Quilleco became operational has been significant (between 50 and 130 m<sup>3</sup>/s, the maximum channel capacity).
50. **Impact on the fertility of the islands in the affected stretch of the Laja River and thus on livelihoods.** The Expert examined the studies' analysis of the Project's impact on this land. The Expert noted that residents referred to these islands as being infertile for the past 10 to 15 years, as also noted by Management.<sup>56</sup> According to the Expert, without a detailed fluvial hydraulics study it is almost impossible to reach a firm conclusion on the cause of this loss of fertility. The Expert noted however that the Requesters felt that the commencement of operations of the Rucúe Power Plant in 1998 had caused massive discharges of water, washing away the fertile soil and covering the islands with sand, gravel, and debris, and transforming part of the islands into infertile land. The Expert further noted that the diversion dam for the Rucúe hydropower plant, which came into operation in 1998, would have had the effect of concentrating flood flows in a small part of the total river width, which would have increased sediment transport capacity when the river was in flood. In the opinion of the Expert, the Quilleco hydropower plant could not have had a similar effect on sediment transport in the stretch of the river where the islands are located, since it did not require a diversion dam on the Laja River, and the extension of the diversion of water from Rucúe on to the Quilleco plant actually reduced flows (and therefore sediment transport) in that stretch of the river.

## Panel Observations

51. The Panel notes that the concerns of the Laja Valley community as summarized in paragraph 43 are serious. In particular, the loss of fertility of the islands in the Laja River has had a

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<sup>55</sup> As shown in the Progress Report, p. 14, taken from *Consultoría Hidrogeológica Sector Río Laja en confluencia con Río Rucúe*, Figure 3.8.

<sup>56</sup> Management Progress Report, p. 2, para 5.

significant adverse impact on the livelihoods of the Valle del Laja community. The Panel notes that, in discussions with the community, the affected people indicated that in their view this loss of fertility was not now reversible, and that the only way to address their loss would be through compensation.

52. The Panel notes the important actions by Management to help ascertain the causes and extent of the harm alleged by the Requesters, and to promote efforts to address these grievances.
53. Taking into account the field visit and the analyses of the Panel's Expert, the Panel agrees that the changes observed in the springs and wells on the plateau and slopes above the Laja River are not the result of the construction and operation of the Quilleco Project.
54. The Panel agrees that a change in the river flow has occurred in the stretch of water between the point where the water was originally returned to the river from the Rucúe plant and the point where the water is now discharged back into the river from the Quilleco power plant, and that this change in water flow is attributable to Quilleco. This stretch of water includes the island areas that are the subject of the Requesters' concern. The Panel however, disagrees with Management's view that the change in water flow has been minor. As noted by the Panel's Expert, the change has been quite significant.
55. The Panel notes, however, that since these islands appear to have already become largely infertile and unsuited for agricultural and livestock activities prior to the Quilleco Project, the reduction in flow in the Laja river is not likely to have further affected local agricultural or livestock activities on the islands. The Panel's visit and its review of available information at this time indicates that the main causes and extent of the harm suffered by the Requesters are not a consequence of the Quilleco Project.
56. The Panel notes that the reduction in water flow caused by the Quilleco Project, compounded by the initial impact caused by the Rucúe Project, constitutes a cumulative impact that should have been properly analyzed as part of the social and environmental impact assessment of the Quilleco Project. The Panel notes that the cumulative impacts of a series of relatively small run-of-river hydropower plants, each of which could be potentially beneficial to the global environment, can have a significant impact on the local environment and the lives of people living in and from the areas affected by such projects, and that these cumulative impacts need to be appropriately evaluated in the social and environmental impact assessments of such projects.
57. The Panel wishes to record that during its visit a new issue of potential harm was brought to its attention. The Panel team was informed by community members living on the South bank of the Laja river<sup>57</sup> that some watercourses that earlier served their water needs have been intercepted by the concrete canal that supplies water to the Quilleco Power Plant, significantly reducing their availability of water.<sup>58</sup> The Panel has subsequently been informed

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<sup>57</sup> The South bank is where the Quilleco diversion and Power Plant are located.

<sup>58</sup> Representatives of these communities met with the Panel team during the field visit and asked to be regarded as Requesters by the Panel. The Panel team informed them of the Panel process and the need to raise their concerns

that these community members have brought these concerns to the attention of Management via a letter dated 8 August 2011.

58. The Panel is pleased to note the progress that Management has made in enhancing Colbun's ability to communicate and interact with the affected community, as noted in the Management Progress Report. During its visit, Colbún officials informed the Panel team that Colbún's consultation practices have been strengthened; while in the past, consultations were limited to taking the views of local officials on behalf of the communities, consultation practices now focus on the affected communities themselves. The Panel notes that Colbún has not only met with the affected people in the Laja Valley but also initiated a working group to address their specific concerns. Furthermore, the affected people in the Laja Valley have confirmed that they are pleased with this dialogue. Nevertheless, the dialogue has not yet yielded concrete results, and more time and effort is needed if the dialogue is really to address the concerns expressed.
59. The Panel observes that Management, in its Progress Report, stated that "*as part of the ongoing project supervision tasks, follow up actions will focus on continuing to strengthen Colbún's communication with the Community*", and that it will continue to work with Colbún "*to assure compliance with the ERPA commitments with respect to social and environmental aspects.*"<sup>59</sup>

## **G. RECOMMENDATION**

60. In light of the above considerations, the Panel does not recommend an investigation of whether the Bank has complied with its operational policies and procedures with respect to the allegations contained in the Request for Inspection. If the Board of Executive Directors concurs with this recommendation, the Panel will advise the Requesters and Management accordingly.

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initially with Management. The Panel later provided them with information on how to get in contact with relevant Bank officials.

<sup>59</sup> Management Progress Report, p. 15, paras 46-47.