

Environmental and Social Data Sheet

Overview

Project Name:	TAMEGA IBERDROLA HYDROPOWER AND STORAGE PORTUGAL
Project Number:	2015-0651
Country:	Portugal
Project Description:	The project concerns the construction of 3 new large dams and 3 hydropower plants with a total capacity of 1,158 MW in the Douro River Basin in northern Portugal.
EIA required:	yes
Project included in Carbon Footprint Exercise ¹ :	yes

Environmental and Social Assessment

The Project is located on Tâmega River and Torno River, within the Douro river basin, in Northern Portugal, 90 km of Porto. The Project construction works shall be completed by June 2023. The Project comprises the following components:

1. Alto Tâmega HPP: 108m arch dam with a monthly reservoir (470ha, 131.7 hm³) and 160 MW, 87m head, 200 m³/s power plant;
2. Daivões HPP: 77m arch gravity dam with a weekly reservoir (340ha, 56.2hm³) and 118 MW, 65m head, 227 m³/s power plant;
3. Gouvães PSP: 32m gravity dam with a daily reservoir (176ha, 12.7hm³) and 880 MW, 657m head, 160 m³/s pumped -storage plant;
4. The associated facilities inter alia access roads, 20kV overhead lines.
5. A quarry located in Gouvães;
6. 400kV grid connection facilities including 400kV Gouvães substation and around 15km overhead lines connecting the three sites to the point of delivery, Ribeira de Pena substation.

In addition, in order to evacuate the power of the Project from Ribeira de Pena substation to the national grid, the Portuguese transmission system operator Redes Energética Nacionais (REN) will upgrade the national grid in Grande Porto area and build new 132 km 400kV overhead lines Feira – Ribeira de Pena – Vieira do Minho. REN will implement the interconnection works by end 2020, separately from the Project, in line with the Portuguese

¹ Only projects that meet the scope of the Pilot Exercise, as defined in the EIB draft Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: above 100,000 tons CO₂e/year absolute (gross) or 20,000 tons CO₂e/year relative (net) – both increases and savings.

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environmental legislation. This overhead line is not financed by the EIB under the scope of the Project but is considered associated facility to the Project.

Environmental Assessment

The Project is part of the Portuguese National Program for Dams with High Hydroelectric Potential (PNBEPH) that have undergone a Strategic Environmental Assessment in 2007 (Decree 232/2007) in line with the SEA Directive 2001/42. The Strategic Environmental Assessment (SEA) used four scenarios to analyse 25 potential hydropower sites with aim at:

- A. Maximizing the hydropower capacity and the generation with environmental and social considerations limited to maximizing the gas emission reductions
- B. Optimizing the hydropower capacity planned within the Douro Basin with a multipurpose approach, taking into account social and environmental impacts
- C. Optimizing the hydropower capacity with the aim at avoiding social conflicts and environmental impacts in priority
- D. Optimizing the hydropower capacity with comprehensive economic, social and environmental impacts consideration

The environmental and social impacts accounted in the SEA include pollution prevention and abatement, biodiversity and ecosystem, climate impacts, cultural heritage, resettlement, vulnerable groups, public health and landscape. The result of the SEA validated the sites of Almourol, Alvito, Daivões, Foz Tua, Fridao, Girabolhos, Gouvaes, Padroselos, Pinhsao, and Alto Tamega, using the scenario D. On that basis, the Government of Portugal launched the tenders for four hydropower concessions in April 2008. On 16 December 2008, IBERDROLA GENERATION SAU (the Promoter) signed the Tamega Concession Implementation Contract with the Government of Portugal.

The concession comprises initially Gouvães, Padroselos, Alto Tâmega and Daivões. The Promoter initiated the Environmental Impact Assessment (EIA) and stakeholder meetings covering the initial concession scope and 16 alternatives, located in five municipalities: Boticas, Ribeira de Pena, Chaves, Vila Pouca de Aguiar and Cabeceiras de Basto. The Promoter contracted a local consulting company to carry out the studies. As a result of the EIA, the preliminary project design for the dams has been approved by the Authorities on 21 June 2010 (as amended on 5 January 2011).

The environmental permit describes detailed conditions to the implementation of the Project based on an integrated approach in Tamega river basin, additional studies and monitoring actions required prior to issuing the Report on Environmental Compliance (RECAPE) for the authorization of the detailed Project design.

Two separate EIA processes were carried out for the Gouvães quarry (June 2011) and the 400kV grid connection facilities.

The Project sites spans over a small part of the Alvão/ Marão Natura 2000 area, and it is located 22km far from Peneda/Geres protected area. The Promoter commissioned an Appropriate Assessment in Alvão/ Marão area in January 2011 that found endangered species listed in Annexe I of the Habitats Directives 92/43. The Appropriate Assessment resulted in an action plan split in 3 territorial plans to restore and improve the biodiversity in the Alvão/ Marão park and 7 plans specific to bats, European otters, Pyrenean desmans, Montagu's and hen harriers, wolves, threatened flora and the Maculinea alcons. On 30 July 2012, the Government of Portugal granted an exception under the article 6(4) of the Habitats Directive for reasons of overriding public interest concerning beneficial consequences of primary importance for the environment, namely the fulfilment of targets on the reduction of

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greenhouse gas emissions and production of electricity from renewable sources. The decision was translated into national Laws 155/2004 and 49/2005. Compensation and monitoring measures have been required. These include multiple measures either to preserve the species in existing locations or to introduce them in similar habitats in the vicinity. The competent national authority approved the Compensation Plan in June 2018. The final Compensation Plan and the notification to the Commission thereof (Form B), will be provided to the Bank in form and substance satisfactory to it. The monitoring programs of the ecological system prior construction started in September 2014.

In line with Water Framework Directive 2000/60 translated into the Portuguese legislation in the Law 58/2005, the competent Authorities granted an exception under Article 4(7) as reported in the Annexe 1 of the Concession Contract signed in 2014. Reasons for modification and alterations leading to deterioration status are reported in the 2009-2015 Douro river basin management plan. The project was identified as a "new project" in the Douro River basin Management Plan (RBMP) 2009-2015. It was concluded that it may endanger the status of "good ecological potential" of the particular river stretch. Thereby Article 4.7 of Water Framework Directive was triggered, it is properly referenced with justification (overriding public interest) and mitigations in the management plan. The RBMP has been updated for years 2016-2021 and examines the cumulative impacts of water protection measures and impacts of envisaged significant projects in river basin.

Further to dam break modelling studies, the competent Authorities have validated the flood return period for each site that determines the capacity of spillways. In the unlikely event of the flood figure be underestimated, the Promoter has identified technical solution to increase substantially the spillway capacity. Besides, as required in the environmental permit, the Promoter shall design and implement an alert system downstream of the Daivoes and Alto Tamega dams and the Promoter has drafted an Emergency Preparedness and Response Plan, approved by the Authorities in 2011.

EIB Carbon Footprint Exercise

The absolute emissions are estimated at 660,000 tonnes of CO₂ equivalent per year taking into account following assumptions:

- The hydropower scheme is connected to the Portuguese high voltage network and will consume 2,120 GWh per annum in pumping mode.
- The Portuguese and Spanish electricity grids are jointly operated in a pan-Iberian market. The Spanish electricity generation share is 84%. The electricity grid emission factor has been calculated pro-rata the market shares for evaluation of the emissions in pumping mode.
- The areas of the hydropower scheme reservoirs sum up at 986 hectares. The resulting gas emissions are estimated at 7,500 tonnes of CO₂ yearly. This is included in the above total emissions figure.

The estimated relative emissions savings are around 163,000 tonnes of CO₂ equivalent per year. It contributes to the national programme for climate change. The relative emissions have been evaluated taking into account following assumptions:

- The absolute emissions are calculated as per above assumptions (660 ktons of CO₂)
- The Project provides dispatchable power generation in a market with low to moderate growth. It is assumed that 50% of generated electricity is replacing power generation in existing fossil fuel-based power plants and 50% of generated electricity is replacing power generation in new power plants. For Spain/Portugal, the latter means CCGT power plants.

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- The Portuguese and Spanish electricity grids are jointly operated in a pan-Iberian market. The Spanish electricity generation share is 84%. The operating margin figure has been calculated pro-rata the market shares for evaluation of the emissions avoided through replacement of existing fossil fuel-based power plants.

For the annual accounting purposes of the EIB Carbon Footprint, the project emissions will be prorated according to the EIB lending amount signed in that year, as a proportion of project cost.

Social Assessment

The Promoter shall acquire around 3,100 land plots representing 1,350 ha of public and private lands. The Portuguese government granted the right for the Promoter to undertake expropriation in case it fails to negotiate the resettlement conditions with the owners.

The project entails the resettlement of 52 households of which 34 are permanent housings. The Bank is not aware of any expropriation having taken place in this respect.

The project will require a peak workforce of about 3,500 workers for construction and will create 40 permanent positions for the operation of the hydropower scheme. The Promoter promotes the participation of local companies to the project. The share of workers from neighbouring municipalities is estimated at 30% in 2018.

Public Consultation and Stakeholder Engagement

Stakeholder engagement activities as part of the EIA in 2009 included meetings and public hearing in five municipalities: Boticas, Ribeira de Pena, Chaves, Vila Pouca de Aguiar and Cabeceiras de Basto. As a result the Project carried out engagement activities and established a dedicated grievance mechanism, with access to local community working abroad. The engagement activities are presented in annual meetings to communities.

Complaints from national Civil Society Organisations have been lodged to the Portuguese National Program for Dams with High Hydroelectric Potential (PNBEPH). As required in the environmental permit and in response to local opposition to the project, the Sponsor put in place a Social & Economic Action Plan amounting at EUR 50m. The purpose of the plan is to promote economic, social and cultural actions activities in neighbouring municipalities as well as restoring or mitigating the project impacts in relation to transport, resettlement, livelihood, recreational area, loss of agricultural land, abandonment of villages and cultural heritage.

In line with the SEP commitments, the project has committed to disclosing monthly summary of grievances and correction measures to affected communities, along with providing information to relevant stakeholders on the socio-economic action plan.

Other Environmental and Social Aspects

The Promoter has the adequate capacity to implement the stakeholder engagement activities throughout the construction phase. It is supported by local consultant and use its own staff to closely monitor the project. The Promoter is tendering the monitoring assignment during construction covering inter alia surface and groundwater resources, biodiversity, social aspects, air quality, noise. In addition, a steering committee formed by representatives from state bodies, civil society organisations, promoter and municipalities monitors and report quarterly on the implementation of agreed compensation and mitigation measures.

On 10 January 2014, the Promoter signed the socio-economic action plan with 7 municipalities affected by the Project and two state bodies, the Portuguese Environmental Agency and the CCDRN (Commission for the coordination and development of the Northern

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region). The plan comprises EUR 30m actions of common interest and additional EUR 20m of compensation and mitigation measures listed in the environmental permit for the Alvão/Marão park and the ecological system of Tamega river basin. It will be implemented during the period of construction in 2015-2022. For the actions of common interest, the stakeholders decide on an annual basis the allocation of around EUR 3m budget. As of today, more than EUR 10m have been spent of which EUR 6m in transport infrastructure, EUR 3.5m in leisure and cultural centres, and EUR 1.8m in cultural heritage protection (Tres Minas).

Conclusions and Recommendations

While the Project is beneficial in providing renewable energy generation, ancillary services and security of supply, it is, however, built in a location sensitive to some endangered species for which specific mitigation activities are required. At the same time, mitigating and compensatory measures are designed and implemented in the context of the River Basin Management Plan and of the socio-economic Action Plan. Based on the information available, and with appropriate environmental conditionality (see below), the project is acceptable for EIB financing on environmental and social terms.

Disbursement conditions:

- none

Undertakings

- Provide RECAPE, where relevant, and subsequent updates in relation to all project components, including the hydropower schemes, the quarry and the 400kV grid connection facilities
- Provide a copy of the environmental impact assessment and environmental permit of the 132 km 400kV overhead lines Feira – Ribeira de Pena – Vieira do Minho, as soon as it becomes publicly available and in any case prior to connection of the Project to the high voltage grid.