



**Verified Carbon
Standard**

GROUPED HYDROPOWER PLANTS IN CHONGQING, YUNNAN, SICHUAN AND GUIZHOU PROVINCES, P.R. CHINA



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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Grouped Project consists of 88¹ individual hydropower plants with a total installed capacity of 210.25 MW, and the maximum installed capacity of an individual power plant is 14 MW. All projects are run-of-river hydropower stations, spread widely across the less developed rural areas of southwestern China, consisting of four provinces. Out of 88 hydropower plants, 9 projects are located in Yunnan, 60 in Chongqing, 13 in Sichuan and 6 in Guizhou province; and out of 88 hydropower plants, 74 plants exporting electricity to the Central China Power Grid (CCPG), and 14 plants exporting electricity to the Southern China Power Grid (SCPG). The entire Grouped Project complies with the VCS.

The start date for the grouped project is the date of the earliest start date of an individual project of the grouped project and it is 13th March 2002. For the implementation dates of each project plant under the Grouped Project please see the table in Appendix 1.

During this monitoring period from 26-02-2020 to 25-04-2021², the total GHG emission reductions generated by the Grouped Project are 363,333 tCO₂e, with 239,928 tCO₂e within the CCPG and 123,405 tCO₂e within the SCPG.

According to VCS requirement, sampling should be carried out for a grouped project, and the sampling of a grouped project shall take account of any subgroups and associated activities within each subgroup. Please see section 4.3.1 for details about the implementation of sampling approach.

1.2 Sectoral Scope and Project Type

The Grouped Project generates electricity from several micro and small-scale hydropower projects, which are all connected to the regional electricity grid. Each individual project activity within the Grouped Project has a total installed capacity of less than 15 MW, which is the limit for small-scale projects as per UNFCCC definition.

¹ Previously there were 98 hydropower plants included in the grouped project, now three hydropower plants (17_Luotian, 19_Baidongyan and 89_Dashi Stage I) have been withdrawn from the grouped project according to the agreement between DOE and the project proponents. There are seven hydropower plants (8_Mayuexi, 14_Lianmeng, 16_Gaodongzi, 20_Dibao, 26_Xiangyang Stage II, 43_Leyuan, 64_Banqiao Stage III) excluded from the grouped project in a conservative manner, according to the 4th verification review response to VCS on 16th Oct 2015.

² The 1st monitoring period is from 28-03-2006 to 05-06-2009; the 2nd monitoring period is from 14-06-2009 to 25-06-2011; and the 3rd monitoring period is from 26-06-2011 to 25-06-2013. The 4th monitoring period is from 26-06-2013 to 25-05-2015. The 5th monitoring period is from 26-05-2015 to 27-03-2016. The 6th monitoring period is from 28-03-2016 to 25-09-2016, which is the beginning of the second crediting period. The 7th monitoring period is from 26-09-2016 to 25-06-2018. The 8th monitoring period is from 26-06-2018 to 25-02-2020. The current 9th monitoring period is from 26-02-2020 to 25-04-2021. There is no overlap between the current monitoring period and previous monitoring periods.

Based on the “Grouped Project” approach under the VCS, which uses the UNFCCC definitions for small scale CDM projects for the individual project activities, the project belongs to following UNFCCC sectoral scope and project type:

Sectoral Scope 1: Energy industries (renewable - / non-renewable sources)

Project Type (i): Renewable energy projects

The project is a grouped project.

1.3 Project Proponent

Project owner/project proponent:

The Grouped Project has an individual project owner for each or a small number of hydropower plants. The comparison table for the individual project plant and its project owner name can be seen in Appendix 2. Here please see the contact information for the project owners.

Organization name	
	1 Chongqing Fuling Zengfuyoujiang Hydroelectric Plant
	2 Chongqing Fuling Huanglong Hydroelectric Plant
	3 Pengshui Runxi Jinxing Hydroelectric Plant of Fuling Chuandong Hydropower Co., Ltd.
	4 Pengshui Shengda Hydropower Co., Ltd.
	22&31 Wulong Chepanchengmending Hydroelectric Plant
	23 Wulong Yajiang Longbao Hydroelectric Plant
	24&40&48 Wulong Runlong Maintenance Company
	25 Wulong Guanqiao Hydroelectric Plant
	27 Wulong Qingtongxi Hydroelectric Plant
	28 Wulong Heping Hydroelectric Plant
	29 Wulong Guanziya Hydroelectric Plant
	30 Wulong Hongchao Hydropower Development Co., Ltd.
	32 Wulong Tukan Shuanglong Hydroelectric Plant
	33 Wulong Chushuitang Hydroelectric Plant
	34 Wulong Shuangqiao Hydroelectric Plant
	35 Wulong Longyuan Science & Technology Development Co., Ltd.
	36&37&38&71 Wulong Boneng Electric Power Co., Ltd.
	39 Wulong Luchi Hydroelectric Plant
	41 Wulong Xiangyun Hydroelectric Plant
	42 Wulong Houping Hongshan Hydroelectric Plant
	44 Wulong Haiheng Agriculture Co., Ltd.
	45 Wulong Suokousi Hydroelectric Plant

	46 Wulong Canggou Xinli Hydropower Plant
	47 Chongqing Wulong Jiangliu Hydroelectric Plant
	49 Wulong Yuanquan Hydropower Co., Ltd.
	50 Wulong Lianghekou Hydroelectric Plant
	51 Wulong Wuhe Hydroelectric Plant
	52 Wulong Sihe Hydroelectric Plant
	53 Wulong Pingqiaoshilingyan Hydroelectric Plant
	54 Wulong Nanmu Hydroelectric Plant
	55 Wulong Canglong Hydropower Co., Ltd.
	56 Wulong Dexin Hydropower Development Co., Ltd.
	57&59 Wulong Landi Hydropower Co., Ltd.
	58 Wulong Longfeng Hydropower Co., Ltd.
	60 Wulong Jiayuan Hydropower Development Co., Ltd.
	61 Wulong Haolong Hydropower Plant
	62 Wulong Shuangchahe Hydroelectric Plant
	63 Wulong Tukan Songshigou Hydroelectric Plant
	65 Wulong Zili Electric Power Co., Ltd.
	66 Wulong Sanyuan Hydroelectric Power Development Co., Ltd.
	67&69 Chongqing Wulong Yuxiang Water Resource Development Co., Ltd.
	68 Wulong Yongxin Hydropower Development Co., Ltd.
	70 Daozhenxianghe Hydropower Development Co., Ltd.
	72 Chongqing Fengyuanjinhui Hydropower Development Co., Ltd.
	73 Wulong Yuqian Comprehensive Development Co., Ltd.
Contact person	Mr. Hu Shihua
Title	Chairman of Chongqing Wulong County Small Hydropower Industry Association
Address	Wulong County, Chongqing City
Telephone	+86 62522468
Email	yu.deng@ecochain.cn
Organization name	5&6 Wanzhou Yongfa Water Conservancy Development Co., Ltd.
	7 Wanzhou Huiyin Hydropower Development Co., Ltd.

	9 Wanzhou Xiaolong Hydropower Development Co., Ltd. 10 Wanzhou Fengyu Hydropower Development Co., Ltd. 11 Chongqing Wanzhou Electric Development Co., Ltd. 12&18 Wanzhou Zhende Hydropower Development Co., Ltd. 13 Wanzhou Yanshan Hydropower Development Co., Ltd. 15 Wanzhou Wanlin Hydroelectric Plant 21 Chongqing Wanzhou Xianfeng Hydroelectric Plant
Contact person	Mr. He Zhigang
Title	Legal Representative of Chongqing Wanzhou Electric Development Co., Ltd.
Address	No. 64, Ningboyizhi Road, Wanzhou District, Chongqing City, 404020, P.R. China
Telephone	+86 23 58123219
Email	yu.deng@ecochain.cn

Organization name	74&75 Xingyi City Puti Power Co. Ltd.
Contact person	Yang Xiulong
Title	Director
Address	8, Fumin Str. Huangcaoban, Xingyi City, Guizhou Province, P.R. China
Telephone	+86 859 3912799
Email	gz_chen@126.com

Organization name	76 Yingjing County Sanhe Township Wumaxi Stage I Hydroelectric Station
Contact person	Mr. Chen Xiankang
Title	Legal Representative
Address	No. 99, 3 rd Section of Yingxingdong Road, Yandao Township, Yingjing County, Ya'an City, Sichuan Province, P.R. China
Telephone	+86 13908163238
Email	yu.deng@ecochain.cn

Organization name	77 Yingjing Sanhe Mozigou Hydroelectric Plant 85 Yingjing County Sanhe Daihuanggou Hydroelectric Plant
Contact person	Mr. Mao Jiong
Title	Legal Representative
Address	Sanhe Village, Yingjing County, Ya'an City, Sichuan Province, P.R. China
Telephone	+86 835 7630286
Email	yu.deng@ecochain.cn

Organization name	78 Yingjing Mayihe Hydropower Station
Contact person	Mr. Mou Wei
Title	Legal Representative
Address	Hospital of Integrated Traditional Chinese Medicine with Western Medicine, Yingjing County, Ya'an City, Sichuan Province, P.R. China
Telephone	+86 835 8625519
Email	libin.xie@ecochain.cn

Organization name	79 Yingjing Jinyatan Hydroelectric Plant
Contact person	Mr. Zou Qin
Title	Legal Representative
Address	Banfanggou, An'jing Village, Yingjing County, Ya'an City, Sichuan Province, P.R. China
Telephone	+86 835 7730021
Email	yu.deng@ecochain.cn

Organization name	80 Yingjing County Toudaoshui Hydroelectric Station
Contact person	Mr. Dong Guozhong

Title	Legal Representative
Address	Yingjing bureau for industry and commerce, Yingjing County, Ya'an City, Sichuan Province, P.R. China
Telephone	+86 13908163614
Email	yu.deng@ecochain.cn

Organization name	81 Sichuan Yingjing Sanhui Electric Power Co., Ltd.
Contact person	Mr. Ren Ruxiang
Title	Legal Representative
Address	Dianli Village, Yingjing County, Ya'an City, Sichuan Province, P.R. China
Telephone	+86 835 7623901
Email	yu.deng@ecochain.cn

Organization name	82 Sichuan Yingjing Yunwushan Hydropower Co., Ltd.
Contact person	Mr. Zhong Jiabing
Title	Legal Representative
Address	No. 70, Heping Street, Yandao Township, Yingjing County, Ya'an City, Sichuan Province, P.R. China
Telephone	+86 13881622669
Email	yu.deng@ecochain.cn

Organization name	83 Shimian Zhongxin Electric Power Development Co., Ltd.
Contact person	Mr. Song Tao
Title	Legal Representative
Address	Gongjiagou Hydropower Station, Caoke Township, Shimian County, Ya'an City, Sichuan Province, P.R. China
Telephone	+86 835 8887016

Email	yu.deng@ecochain.cn
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Organization name	84 Sichuan Yingjing Hengyuan Electric Power Co., Ltd.
Contact person	Mr. Wang Guoqing
Title	Board Chairman
Address	Coal Industry Bureau of Yingjing County, Ya'an City, Sichuan Province, P.R. China
Telephone	+86 835 7630338
Email	yu.deng@ecochain.cn

Organization name	86 Sichuan Yingjing Gaoqiaohe Electric Power Co., Ltd.
Contact person	Mr. Liao Wubin
Title	Legal Representative
Address	Gaoqiaohe Hydropower Station Office, No. 141, Yingxingdong Road, Yandao Township, Yingjing County, Ya'an City, Sichuan Province, P.R. China
Telephone	+86 835 7622798
Email	yu.deng@ecochain.cn

Organization name	87 Sichuan E'bian Heizhugou Hydropower Co., Ltd.
Contact person	Mr. Li Donghua
Title	General Manager
Address	No. 25, Buxing Street, Shaping Township, Ebian Yi Autonomous County, Leshan City, Sichuan Province, P.R. China
Telephone	+86 833 5226188
Email	yu.deng@ecochain.cn

Organization name	88 E'bian Longxin Electric Power Co., Ltd.
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Contact person	Mr. Wei Yi
Title	General Manager
Address	Heizhugou Township, Ebian Yi Autonomous County, Leshan City, Sichuan Province, P.R. China
Telephone	+86 833 5280518
Email	wydgx@163.com

Organization name	90&91&92 Lingcang Runda Hydropower Co., Ltd.
Contact person	Mr. Yang Weimin
Title	General Manager
Address	Building B, Kangfa Business-living Building, Hongqiao Street, Linxiang District, Lincang City, Yunnan Province, P.R. China
Telephone	+86 883 8881577
Email	libin.xie@ecochain.cn

Organization name	93 Midu County Taishan Power Co., Ltd.
Contact person	Mr. Zhi Jianping
Title	Legal Representative
Address	Niujie Kanglang Village, Midu County, Yunnan Province, P.R. China
Telephone	-
Email	zhangqingxi@263.net

Organization name	94 Zhenyuan Yi, Hani and Lahu Autonomous County Xiaojiehe Hydropower Co., Ltd.
Contact person	Mr. Zhang Jizhong
Title	Legal Person
Address	Nongfaban, Zhenyuan County, Puer City, Yunnan Province, P.R. China

Telephone	+86 879 5861888
Email	zhangqingxi@263.net

Organization name	95 Xishuangbanna Chuangye Hydropower Development Co., Ltd.
Contact person	Mr. Wei Yulin
Title	Legal Person
Address	Jinghong Road 26, Jinghong City, Xishuangbanna, Yunnan Province, P.R. China
Telephone	+86 691 2122286
Email	zhangqingxi@263.net

Organization name	96 Yingjiang County Tianchao Hydropower Co. Ltd.
Contact person	Mr. Zhao Chuanshan
Title	Director
Address	Jiema Village, Yingjiang County, Yunnan Province, P.R. China
Telephone	+86 871 8151606
Email	zengs11999@sina.com

Organization name	97 Jinping Mengqiao Datan Electricity Co. Ltd.
Contact person	Mr. Zhu Tianchao
Title	Director
Address	Hengxin Yinshicheng, Xinan Str., Kaiyuan City, Yunnan Province, P.R. China
Telephone	+86 873 7272738
Email	libin.xie@ecochain.cn

Organization name	98 Yunnan Fugong Huatai Electricity Development Co. Ltd.
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Contact person	Mr. Duan Yingtao
Title	Director
Address	Shangpa Mnicipality, Fugong County, Yunnan Province, P.R. China
Telephone	+86 871 8151606
Email	zengs11999@sina.com

1.4 Other Entities Involved in the Project

Organization name	Swiss Carbon Value Ltd. ³
Role in the project	Project developer
Contact person	Rex Yang
Title	Project Manager
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Telephone	+41 43 501 35 50
Email	x.yang@southpole.com

1.5 Project Start Date

The start date for the grouped project is the date of the earliest start date of an individual project, i.e. the Qingtongxi Hydroelectric Plant, and it is March 13th, 2002.

1.6 Project Crediting Period

It is a renewable crediting period and can be renewed twice. The total number of years is 30 years.

The first Crediting period is from 28 March 2006 to 27 March 2016. The total number of years is 10 years. The start date of the first crediting period was set to comply with the VCS 2007.1 which noted that the earliest Project Crediting Period Start Date shall not be earlier than 28 March 2006 for non-AFOLU projects.

The second crediting period is from 28 March 2016 to 27 March 2026. The total number of years is 10 years.

³ Swiss Carbon Value Ltd. is a fully owned subsidiary of South Pole Carbon Asset Management Ltd. and acts as carbon asset developer and buyer. Swiss Carbon Value Ltd. is hereinafter referred to as South Pole.

1.7 Project Location

Based on the geographical distribution situation of the hydropower plants under the proposed VCS Grouped project, the hydropower plants are separated into four subgroups: subgroup separately in Chongqing City, Sichuan Province, Yunnan Province and Guizhou Province. Maps of the four provinces Chongqing, Sichuan, Yunnan, and Guizhou indicating the individual project locations are provided below. The exact geodetic coordinate of each hydropower plants under the Grouped project are all provided in Appendix 3, and all these geographic coordinates data are from the real measurement data by the intermediaries with GPS measuring tools.

As can be seen in Figure 1-1, and Figure 1-2 for Chongqing Province, 11 hydropower plants are located in Wanzhou County along the Northeast direction from Chongqing city (project numbers included: 5~7,9~13,15, 18, 21), whereas 49 hydropower plants are located in Wulong County to the Southeast of Chongqing (project numbers included: 1~4, 22~25,27~42,44~63,65~69).



Figure 1-1 Chongqing Municipality City in China



Figure 1-2 Hydropower Plants in Chongqing City

As shown in Figure 1-3 and Figure 1-4, 2 hydropower plants are located in Ebian County (project numbers included: 87, 88) and 11 in Ya'an County within Sichuan province, southwest of Sichuan's capital city Chengdu (project numbers included: 76~86).



Figure 1-3 Sichuan Province in China



Figure 1-4 Hydropower Plants in Sichuan Province

Figure 1-5 and 1-6 shows 9 power plants in Yunnan Province (project numbers included: 90~98), sparsely distributed throughout the entire province with borders to Myanmar, Laos and Vietnam.



Figure 1-5 Yunnan Province in China



Figure 1-6 Hydropower Plants in Yunnan Province

Figure 1-7 and Figure 1-8 indicates 6 project locations in Guizhou province (project numbers included: 70~75).



Figure 1-7 Guizhou Province in China

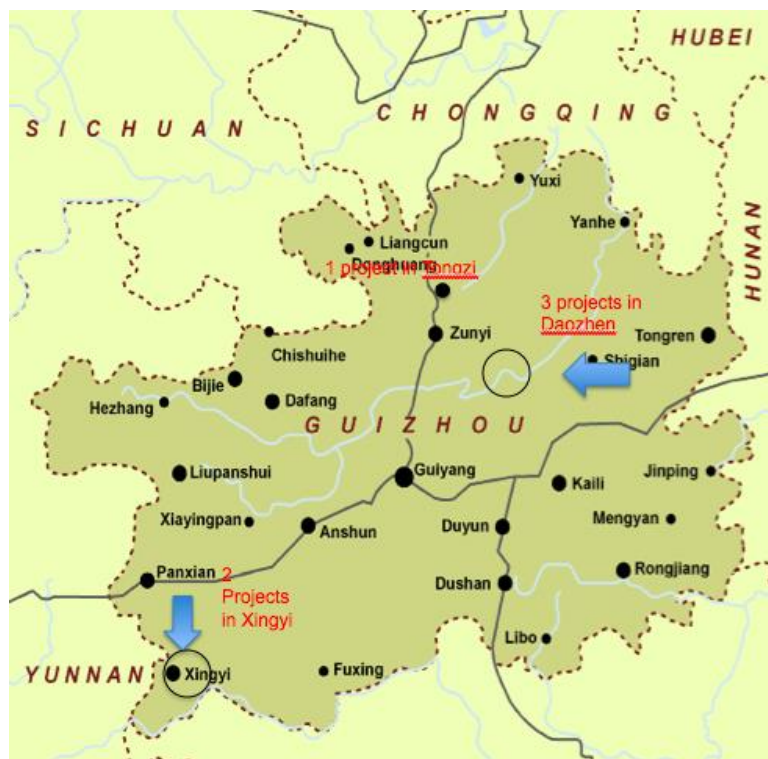


Figure 1-8 Hydropower Plants in Guizhou Province

1.8 Title and Reference of Methodology

As per Appendix B of the UNFCCC's "Simplified modalities and procedures for small-scale clean development mechanism project activities", following approved small-scale CDM methodology is applied to the Project:

Project Type (i): Renewable energy projects

Project Category/Methodology: AMS-I.D. – Grid connected renewable electricity generation (Version 18.0)

For more information about the methodology, please refer to the following website:
<http://cdm.unfccc.int/methodologies/SSCmethodologies/approved>

For the calculation of the combined margin baseline emission factor, the approved "Tool to calculate the emission factor for an electricity system" (Version 05.0) is used. For more information, please refer to the following link:
<http://cdm.unfccc.int/Reference/tools/index.html>

1.9 Participation under other GHG Programs

The project has been only registered under the VCS Program, and it has not been registered under any other approved or not approved GHG programs.

1.10 Other Forms of Credit

There are 88 hydroelectric plants in total. Out of them, 28 are located in Yunnan, Sichuan and Guizhou Provinces where there are no emissions trading systems or other compliance mechanisms. For the 60 hydro plants located in Chongqing, they started operation before 2008. As per the Chongqing ETS regulations, emission data from year 2008 to 2012 of fossil fuel power generation plants covering by the ETS have been used for setting the baseline and cap. Therefore, the 60 hydro plants with operation start date before 2008 had already made their impacts on the fossil fuel power generation plants before the year 2008, so no extra allowances would be earned by the fossil fuel power generation plants due to the operation of those hydropower plants, thus no double counting should be expected. This has been checked and confirmed during 2nd crediting period renewal validation process. Therefore none of all individual project activities under the Grouped Project is included in any emissions trading programs or any other mechanisms that include GHG allowance trading. The net GHG emission reductions generated by the Grouped Project during this monitoring period have not been used for compliance under any emission trading programs or mechanisms either.

None of all individual project activities are registered under any other carbon programs to create another form of GHG-related environment credit such as CDM or GS, therefore the project has not sought or received any other form of GHG-related environmental credit during this monitoring period.

1.11 Sustainable Development

The project activity contributes significantly to the region's sustainable development in the following ways:

- (1) To improve the local and regional economy development by providing electricity to meet its increasing demands;
- (2) To displace electricity from coal-fired power plants and thus directly reduces environmental pollution caused by the burning of coal;
- (3) To make greater commercial use of hydroelectric resources, increase tax revenue of the local government and income of local residents, improve local traffic conditions, boost local standard of living, create new job opportunities for local people and thus promote the sustainable development in the local regions.

2 SAFEGUARDS

2.1 No Net Harm

All of the projects are small scale hydropower project with the installed capacities from 0.1 MW to 14 MW. According to the EIA approval, the environmental impacts of these small hydro power stations are not considered to be significant after the compensation measures. Thus, the project is not involved of net harm.

2.2 Local Stakeholder Consultation

During this monitoring period, no negative feedbacks received.

2.3 AFOLU-Specific Safeguards

N/A

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

During this monitoring period, all the individual project plants under this Grouped Project are operating normally, and no events happened, which may impact the GHG emission reductions or removals and monitoring.

The technical specifications of the main equipment (i.e. turbines and generators) installed at each project plant under the Grouped Project are listed in the table in Appendix 6.

During this monitoring period, no project proponents changed. The project owner of each project plant under the Grouped Project is listed in the table in Appendix 2.

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviations during this monitoring period.

3.2.2 Project Description Deviations

No project description deviations during this monitoring period.

3.3 Grouped Projects

There is no new instance of the project activity included under this Grouped project during this monitoring period.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EG_{m,y}$
Data unit	MWh
Description	Electricity delivered to the grid by relevant power sources m in (years) y.
Source of data	China Electric Power Yearbook 2012-2014.
Value applied	Provided in Appendix 1 in the VCS-PD.
Justification of choice of data or description of measurement methods and procedures applied	The data are from 2015 baseline emission factors for regional power grids published by China NDRC.
Purpose of Data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$FC_{i,m,y}$
Data unit	$10^4\text{t}/10^8\text{m}^3$
Description	Amount of fuel i consumed by relevant power sources m in (years) y.
Source of data	China Energy Statistics Yearbook 2012-2014.
Value applied	Provided in Appendix 1 in the VCS-PD.
Justification of choice of data or description of measurement methods and procedures applied	The data are from 2015 baseline emission factors for regional power grids published by China NDRC.
Purpose of Data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$EF_{CO_2,i}$
Data unit	tCO ₂ /TJ
Description	CO ₂ emission factor per energy unit of fuel i .
Source of data	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
Value applied	Provided in Appendix 1 in the VCS-PD.
Justification of choice of data or description of	IPCC 2006 default value.

measurement methods and procedures applied	
Purpose of Data	Calculation of baseline emissions.
Comments	-

Data / Parameter	NCV_i
Data unit	TJ/10 ³ t
Description	Net calorific value per mass or volume unit of fuel i .
Source of data	China Electric Power Yearbook.
Value applied	Provided in Appendix 1 in the VCS-PD.
Justification of choice of data or description of measurement methods and procedures applied	IPCC 2006 default value.
Purpose of Data	Calculation of baseline emissions.
Comments	-

Data / Parameter	Efficiency level of best technology commercially available in China for coal-fired power generation.
Data unit	%
Description	Efficiency level of best technology commercially available in China for coal-fired power generation.
Source of data	China DNA: Notification on Determining the Regional Grid Emission Factors of China.
Value applied	Provided in Appendix 1 in the VCS-PD.
Justification of choice of data or description of measurement methods and procedures applied	Officially released statistics; publicly accessible and reliable data source.
Purpose of Data	Calculation of baseline emissions.
Comments	-

Data / Parameter	Efficiency level of best technology commercially available in China for oil and gas-fired power generation.
Data unit	%

Description	Efficiency level of best technology commercially available in China for oil and gas-fired power generation.
Source of data	China DNA: Notification on Determining the Regional Grid Emission Factors of China in 2015.
Value applied	Provided in Appendix 1 in the VCS-PD.
Justification of choice of data or description of measurement methods and procedures applied	Officially released statistics; publicly accessible and reliable data source.
Purpose of Data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$CAP_{y,j}$
Data unit	MW
Description	The Installed Capacity of Power Sources j of Province m in the year y .
Source of data	China Electric Power Yearbook.
Value applied	Provided in Appendix 1 in the VCS-PD.
Justification of choice of data or description of measurement methods and procedures applied	Official Statistical Data.
Purpose of Data	Calculation of baseline emissions.
Comments	-

Data / Parameter	Cap_{BL}
Data unit	MW
Description	Installed capacity of the hydro power plant before the implementation of the project activity. For new hydro power plants, this value is zero.
Source of data	Project site.
Value applied	0
Justification of choice of data or description of measurement methods and procedures applied	For new hydro power plants, the value is zero.
Purpose of Data	Calculation of project emissions.

Comments	-
Data / Parameter	ABL
Data unit	m ²
Description	Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full. For new reservoirs, this value is zero.
Source of data	Project site.
Value applied	0
Justification of choice of data or description of measurement methods and procedures applied	For new reservoirs, the value is zero.
Purpose of Data	Calculation of project emissions.
Comments	-

4.2 Data and Parameters Monitored

Data and parameters monitored for individual project activities exporting electricity to Central China Power Grid:

Data / Parameter	EG _{PJ,y}
Data unit	MWh
Description	The accumulated net electricity exported to the Central China Power Grid by all the hydropower plants under the Grouped project located in Chongqing City and Sichuan Province in the year y.
Source of data	Measured by meters.
Description of measurement methods and procedures to be applied	Measured continuously by kilowatt-hours meters and recorded on a monthly basis by monitoring personnel.
Frequency of monitoring/recording	Measured continuously and recorded on a monthly basis.
Value monitored	The electricity exported to the CCPG by the Grouped project is 430,471.438 MWh during this monitoring period.

Monitoring equipment	The detailed information including type, accuracy class, serial number of the monitoring equipment is provided in Table 4-4 in section 4.3.2.
QA/QC procedures to be applied	- The exported electricity to the grid is measured by kilowatt-hours meters (Gateway meters), which are installed on the property rights division points, and are appointed by the Power Purchase Agreements. - Trained and qualified staff is responsible for recording electricity export data from the kilowatt meters. - Meters will be calibrated periodically according to relevant national standards. - The data measured by meters will be crosschecked with electricity receipts, which is used as the basis of calculating electricity sales income. Considering possible limitations and errors in accounting or payment conversion, the more conservative amount shall be used, if there is a difference. - Only the net electricity exported to the grid shall be taken into account. This means the monitoring measurement method shall exclude the electricity imported by the project activity. - The net electricity exported will be verified by electricity receipts. Calibration of the gateway meter (owned by the grid company) will be performed by a qualified entity in regular intervals.
Purpose of the data	Calculation of baseline emissions
Calculation method	Only the net electricity export to the grid shall be taken into account. This means that the monitoring measurement method shall exclude electricity imported from the grid by the project activity and possible transmission losses.
Comments	-

Data and parameters monitored for individual project activities exporting electricity to Southern China Power Grid:

Data / Parameter	EG _{PJ,y}
Data unit	MWh

Description	The accumulated net electricity exported to the Southern China Power Grid by all the hydropower plants under the Grouped project located in Yunnan and Guizhou Provinces in the year y.
Source of data	Measured by meters.
Description of measurement methods and procedures to be applied	Measured continuously by kilowatt-hours meters and recorded on a monthly basis by monitoring personnel.
Frequency of monitoring/recording	Measured continuously and recorded on a monthly basis.
Value monitored	The electricity exported to the SCPG by the Grouped project is 248,087.181 MWh during this monitoring period.
Monitoring equipment	The detailed information including type, accuracy class, serial number of the monitoring equipment is provided in Table 4-4 in section 4.3.2.
QA/QC procedures to be applied	• The exported electricity to the grid is measured by kilowatt-hours meters (Gateway meters), which are installed on the property rights division points, and are appointed by the Power Purchase Agreements. • Trained and qualified staff is responsible for recording electricity export data from the kilowatt meters. • Meters will be calibrated periodically according to relevant national standards. • The data measured by meters will be crosschecked with electricity receipts, which is used as the basis of calculating electricity sales income. Considering possible limitations and errors in accounting or payment conversion, the more conservative amount shall be used, if there is a difference. • Only the net electricity exported to the grid shall be taken into account. This means the monitoring measurement method shall exclude the electricity imported by the project activity. • The net electricity exported will be verified by electricity receipts. • Calibration of the gateway meter (owned by the grid company) will be performed by a qualified entity in regular intervals.

Purpose of the data	Calculation of baseline emissions.
Calculation method	Only the net electricity export to the grid shall be taken into account. This means that the monitoring measurement method shall exclude electricity imported from the grid by the project activity and possible transmission losses.
Comments	-

Data / Parameter	Cap _{PJ}
Data unit	MW
Description	Installed capacity of the hydro power plant after the implementation of the project activity.
Source of data	Project site
Description of measurement methods and procedures to be applied	Determine the installed capacity based on manufacturer's specifications or commissioning data or recognized standards.
Frequency of monitoring/recording	Once at the beginning of each crediting period. All data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the crediting period.
Value monitored	There are only two hydropower plants under the grouped project having reservoirs ((74_Puti 1 and 75_Puti 2). The value of Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project (No.74) is 6 MW. The value of Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project is 9.5 MW.
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of project emissions
Calculation method	-
Comments	-

Data / Parameter	A _{PJ}
Data unit	m ²
Description	Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.
Source of data	Project site
Description of measurement methods and procedures to be applied	Measured from topographical surveys, maps, satellite pictures, etc.
Frequency of monitoring/recording	Once at the beginning of each crediting period. All data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the crediting period.
Value monitored	There are only two hydropower plants under the grouped project having reservoirs ((74_Puti 1 and 75_Puti 2). The value of Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project (No.74) is 0.334 km ² . The value of Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project is 0.161 km ² .
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of project emissions.
Calculation method	-
Comments	-

4.3 Monitoring Plan

4.3.1 The implementation of sampling approach

According to VCS requirement, sampling should be carried out for a grouped project, and the sampling of a grouped project shall take account of any sub groups and associated activities within each sub group.

A sampling approach was applied to the Grouped Project according to the guideline set out in Annex A.2.4.6 of ISO 14064-3, Clause A.2.4.6.4⁴. Based on the geographical distribution situation of the hydropower plants under the proposed VCS Grouped project, the hydropower plants are separated into four subgroups: subgroup separately in Chongqing City, Sichuan Province, Yunnan Province and Guizhou Province. By considering the project amount within different sub-groups and classified scale of the project activity (i.e. installed capacity $\leq 5\text{MW}$ or $> 5\text{MW}$), in the end, 18⁵ projects of the total 88 hydropower plants under this Grouped project are sampled. The final sampling result is demonstrated in the table below:

Table 4-1 Sampling Projects

Province	Number of Projects	Number of Samples Required	Sampling Project Serial No.
Sichuan	13	4	79,80,84,88
Chongqing	60	8	15, 21, 23,25,31,33,34,52
Yunnan	9	3	95,96,98
Guizhou	6	3	71,74,75
Total	88	18	-

Based on the main characteristics of the Grouped project, such as the geographical distribution, to which power grid the electricity is supplied, project type and similarity, installed capacity of the individual project and so on, the sampling projects are the most representative projects for the whole 88 projects under the Grouped project. And the sample projects will be chosen to describe the monitoring plan, including the calibration record and monitoring flow diagrams. Therefore, during the verification, only the sampling projects need to be verified and under completeness check.

4.3.2 Monitoring Plan Description

The objective of the monitoring plan is to ensure the complete, consistent, clear, and accurate monitoring and calculation of emission reductions during the entire crediting

⁴ VCS Guidance – Validation and Verification Manual, 3.3.1.1 Sampling Plans (https://verra.org/wpcontent/uploads/2018/03/VCS_Validation_Verification_Manual_v3.2.pdf). For details please refer to section 3.2 of the validation report.

⁵ Since all the retrofitted projects (i.e. Project No. 17, 19 and 89) were withdrawn by the project participants during validation process. And there are seven hydropower plants (8_Mayuexi,14_Lianmeng,16_Gaodongzi, 20_Dibao, 26_Xiangyang Stage II, 43_Leyuan, 64_Banqiao Stage II) have excluded from the grouped project in a conservative manner, although no double counting would be expected. Thus, the total project amount is finally 88 sub projects with the Grouped Project; And since one of the withdrawn projects (Project No. 89) was also the sampled project (the previous total number of sampled projects was 19 before all three retrofitted projects were withdraw), so the total sampling project amount is finally 18 projects within the Grouped Project.

period of the project activity. The project owners will be responsible for the implementation of the monitoring plan, and the grid company will cooperate with the project owners.

According to the VCS requirements, for a Grouped Project, a central GHG information system and control is associated with the project and its monitoring. South Pole is setting up this central information system for this Grouped Project. South Pole is responsible for gathering and managing individual projects' information and their monitoring relevant documents. Each project owner sends monthly monitoring information and associated evidences to South Pole. South Pole checks all documents and compiles the central monitoring report, which shows emission reductions per year for each individual hydropower plant under the Grouped Project. The monitoring report is then submitted to a qualified independent third party (VVB) which checks the correctness of the data by carrying out desk reviews of submitted documentation and conducting on-site spot checks for a randomly selected sample of projects.

The central GHG information system and control

As per VCS guidelines, the central GHG information system was established to ensure accurate monitoring control and management of individual projects. The system will specify the organization, control and procedures required for certain key monitoring system features.

Monitoring Organizational Structure

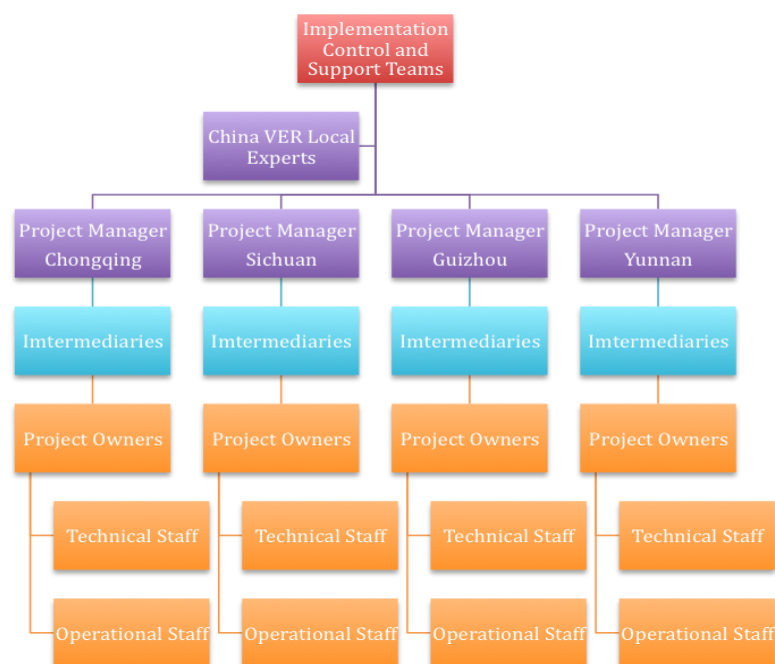


Figure 4-1 Monitoring Organizational Structure

The central GHG information system is based on a clear organization structure integrating functional units: projects owners, Intermediary companies, South Pole's China teams and

our Global Quality Control and Technical Support Team. South Pole's Beijing implementation team, which will allocate four project managers to the Grouped Project, is responsible for assessment of all relevant data and documents for the GHG information system and compilation of the Monitoring Report. Beijing senior VER experts undertake the initial quality check of the Monitoring Report compiled by the implementation team. VER experts are specialized in the VER methodology and also have local hydro electricity industry sector knowledge for a better assessment of the documents. Last but not least, the revised Monitoring Report will be revised by South Pole's central internal Quality Control and Technical Support team, ensuring compliance with VCS and related guidelines.

Project Monitoring Management Approach

South Pole brings a successful track record and a wealth of experience in the development of CDM methodologies, project and programme activities under CDM and the VCS. Team members include experienced local and international experts. Given the novelty of the Grouped Project approach, South Pole is putting together a team comprising senior experts with deep methodological and programme experience.

South Pole's internal quality check procedure follows strict and efficient practices in order to ensure that all deliverables meet its high quality standards. To this end it deploys the 'RACI' approach, which splits responsibilities for project management into four categories, as illustrated in Figure 3-2:

1. Responsible (R) – The team members who carry out the analyses and writing required to complete the task. In other words, who do the work to achieve the task
2. Accountable (A) – The team member who is accountable for the completion of the task. Accountable must sign off (Approve) on work that Responsible provides.
3. Consulted (C) – South Pole colleagues who are consulted during the completion of the tasks (two-way communication).
4. Informed (I) – South Pole colleagues who are kept up-to-date on progress (one-way communication) and should be notified of result.

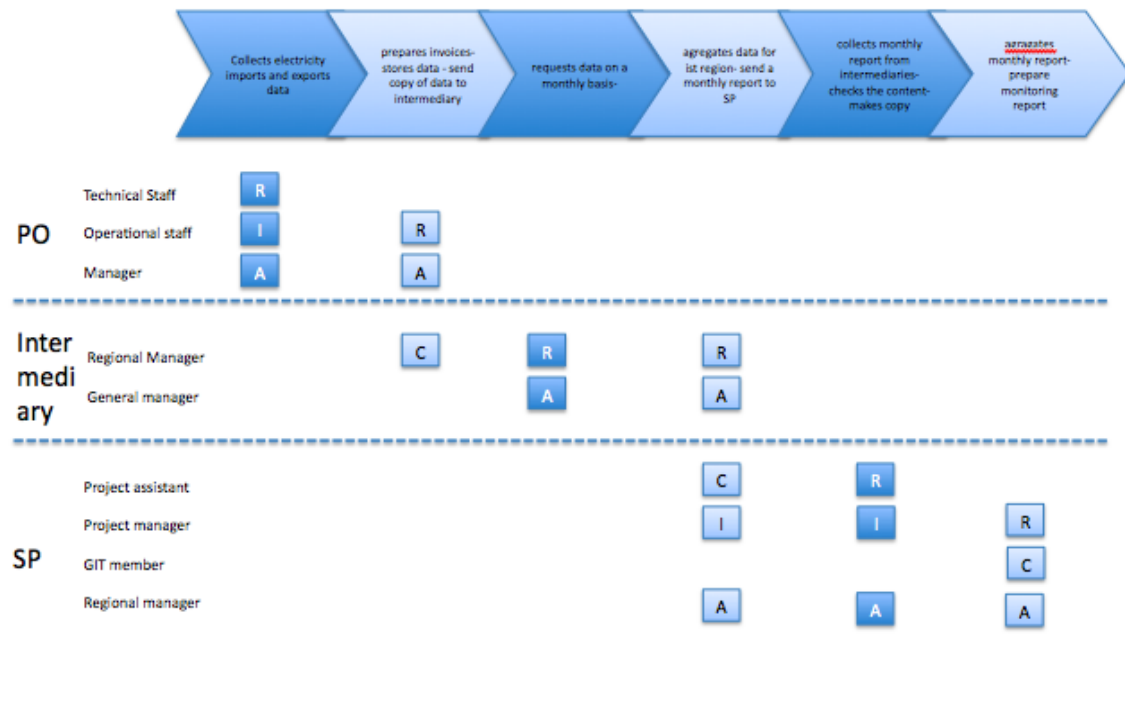


Figure 4-2 Quality assurance process in project management at South Pole

To explain the graph more explicitly:

At the PO level, the monitoring team is responsible for gathering the data of the electricity generation daily and monthly from the electrical meters and also for sending the recorded electricity generation data to intermediaries. The following are the work break down for this monitoring process.

Responsible (Action 1, Operational staff): who do the electricity generation recording and collect electricity imports of the hydro power station.

(Action 2, Operational staff): who are also response to keep of copies of electricity generation monitoring data and also send them to the intermediaries between us.

Informed (Technical staff): operational staff of hydro power station who are kept up-to-date on electricity generation recording

Consulted (Manager): suggestions and opinions can be asked by both technical staffs and operational staffs regarding electricity generation monitoring.

Accountable (Action 1, Manager): the manager of the monitoring power station needs to approve the accuracy of the electricity generation monitoring results.

(Action 2, manager): the manager of the monitoring power station needs to make sure the accuracy of data transferring process between its organization and the intermediate.

At the intermediary level, intermediaries from the four project provinces are responsible for gathering EG data monthly from all the project owners and collaborate between SP and POs to ensure the quality of each steps of monitoring process.

Responsible (Action 1, regional manager of intermediaries), who need to request data from POs contracted with their organization.

(Action 2, regional manager of intermediaries), who need to aggregate EG data and send these to South Pole.

Accountable (Action 1&2, general manager of intermediaries), who are accountable and responsible for the action the regional manager delivers, i.e. action 1: request data from the POs and action 2: aggregate EG data and send these data to South Pole.

At South Pole level, the involvement of different level of organisation is there to make sure that the central information system is well-functioned. The following demonstrates the actions that South Pole's internal organisation delivered subjects to the RACI model.

1. Interaction between intermediaries:

Consulted (Action 1, assistant project manager) Assistant project managers consult the intermediaries for the EG aggregation and make sure the aggregation is delivered subjects to relevant guidance and are eligible under VSC standard. Assistant project managers need to cross check with aggregation data that the intermediaries provided.

Informed (Action 2, local VER expert) Assistant project manager should inform the local VER experts the outcomes of the consultation with the intermediaries and any other communications regarding the grouped monitoring process.

Accountable (Action 1, regional manager) Regional managers are accountable for the above mentioned actions that assistant project managers and local VER experts deliver regarding the monitoring process.

2. Monitoring process during internal at South Pole

Responsible (Action 1, assistant project managers) who are responsible for collecting monthly reports from intermediaries and make copies.

Informed (Action 2, local VER expert) Assistant project manager should inform the local VER experts the outcomes of EG data collection from intermediaries

Accountable (Action 1, regional manager) Regional managers are accountable for the above mentioned actions which assistant project managers and local VER experts deliver regarding the monitoring process.

Consulted (Action 2, ISC member), South Pole's ISC members provides their opinions and suggestions for the monitoring report.

Monitoring Roles and Responsibilities

The project proponents are involved for collecting the monitoring information, operation and maintenances. The structure is given below identifying job description for each parties involved.



Figure 4-3 Monitoring Roles and Responsibilities

Monitoring Procedures

Selection and management of the GHG data and information;

Table 4-2

Parameter	Source of data	Data	Management	Remark
EG (kWh)	Electronic measurement and monitored by Gateway meter	Local grid company Monthly Electricity Generation bill Electricity generation record/report/statement/ produce by Project owner on the site project	The proper calibration of electronic meter is maintained by certified calibration entity and the O&M operator.	The electronic meter used for electricity generation measurement at substation are kept in custody, sealed, maintained by state electricity utility.

Processes for collecting, processing, consolidating and reporting GHG data and information;

Table 4-3

Data collection	Data processing	Data consolidation	Reporting GHG data	Information
-----------------	-----------------	--------------------	--------------------	-------------

The EG is jointly recorded by POs authority and electricity utilities every month	Onsite staff take record of the EG on a daily basis. Daily data are aggregated before the settlement with grid company. The EG by each project is process for issuing Electricity generation bill	Local grid company monthly bills or the EG records/reports are considered for GHG reduction calculation.	The monthly electricity generation bill, electricity or/and generation records/reports/statements are considered for reporting the GHG data	The measured electricity generated will be cross check with records (i.e. invoice) for sold electricity.
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Site level monitoring guidance

The grid company and the project owners are responsible for operation and maintenance of their respective electricity meters. All parties guarantee that the measuring equipments are in good condition and completely sealed.

- (i) The project owner reads and checks the electricity meter and records the data periodically as a primary record of the amount of the electricity supplied to the grid;
- (ii) The project owner compiles the data recorded for the amount of electricity supplied to the grid in a monthly report and provides the monthly status sheet of electricity sales to the grid company;
- (iii) The grid company confirms the amount of exported electricity after verification and acceptance of the electricity data supplied by the project owner;
- (iv) The project owner provides an electricity sales invoice to the grid company according to the actual amount of electricity delivery reflected in the grid company's confirmation. A copy of the invoice is kept by the project owner;
- (v) The project owner keeps also copies of the status sheet of electricity sales to the grid company. The periodical records of the electricity meter's measurements are archived on paper.

If either the project owner or the grid company detects any distortion or mal-function of the electricity meter, it promptly informs the other party to jointly investigate and solve the problem.

If for some projects, either the project owner or the grid company detects any distortion or mal-function of the electricity meter, a conservative discount factor on the emission reductions from the projects shall be applied.

The meter reading will be readily accessible for the VVB carrying out the verification of monitoring data. The project owner will keep the calibration test records for verification.

Monitoring Equipment and program

According to Technical Administrative Code of Electric Energy Metering (DL/T448-2016), the electric energy metering equipment is properly configured, and is checked by the project owner and the grid company before the project is put into operation.

The electric energy metering equipments comprise an electric energy meter (or kilowatt meter) and other electric energy metering devices. The amount of electricity exported to and imported from the power grid is measured by the electric energy meter. The electric energy meter is installed at the physical metric point determined by both of the project owner and the grid company according to the electricity sales/purchase contract. The monitoring plan will utilize the measurement, which is used in the balance sheet of the grid company and is measured by the meter set up by the grid company.

The type, accuracy class, serial number, and calibration information of the monitoring meters for the sampling projects are listed in the tables below, the detailed information of the monitoring meters for each individual project under the Grouped Project (i.e. accuracy, installation position, transmission pathway) is demonstrated in Appendix 4, and the monitoring flow diagrams for the sampling projects are demonstrated in Appendix 5.

In Table 4-4.1, the sampling projects with the calibration certificates for their invoice meters issued by the corresponding calibration entities are listed.

In Table 4-4.2, the sampling projects with the certification illustration letters issued by the calibration entities are listed.

Several certification illustration letters have been respectively issued by the local power grid companies (Chongqing City Wulong County Power Supply Limited Company), who are also the calibration entities for the Table 4-4.2 listed sampling projects. Meters of sampling projects, with the project numbers included 23, 25, 31, 33, 34, 52, 72 have been calibrated by Chongqing City Wulong County Power Supply Limited Company during this whole monitoring period. The calibration illustration letters confirm that all the invoice meters of these included projects have been calibrated and verified according to the relevant national regulations and standards (DL/T448-2016) during this whole monitoring period and all calibration results for invoice meters meet the required standards. Certified labels are posted on the calibrated meters.

All the calibrations for the monitoring meters of all sampling projects are valid during this whole monitoring period.

Table 4-4.1 Calibration information for sampling projects with calibration certificates

Project No.	Project title	Meter Serial No.	Meter Model Number	Accuracy Class	Calibration Certificate Serial No.	Calibration Entity	Calibration Date	Calibration Valid Until
15	Chongqing Wanzhou Wanlin Hydroelectric Plant	293742	DSSD3 23	1	032700019 162000019	Chongqing City Wanzhou Measurement Quality Testing Center	13/01/2018 13/01/2021	12/01/2021 12/01/2024
21	Chongqing Wanzhou Xianfeng Hydroelectric Plant	254729	DSSD5 36	0.5S	077100050	Chongqing City Wanzhou Measurement Quality Testing Center	11/08/2018	10/08/2023
74	Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project	148092	DSSD5 1	0.5S	201906382	Xingyi City Power Supply Limited Company	23/06/2019	06/22/2024
75	Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project	820042	DSSD3 31	0.2S	201902932	Xingyi City Power Supply Limited Company	24/02/2019	23/02/2024
79	Jinyatan Hydroelectric Plant	332021	DSSD3 31	2	20200312	Ya'an Yingjing Power Supply Limited Company Metrological Verification Station	08/01/2020	07/01/2023

80	Toudaoshui Hydroelectric Station	328998	DSSD3 31	1	20180323 20210308	Ya'an Yingjing Power Supply Limited Company Metrological Verification Station	28/03/2018 28/03/2021	27/03/2021 27/03/2024
84	Chahe Stage III Hydroelectric Plant	308646	DSSD3 31	1	20190381	Ya'an Yingjing Power Supply Limited Company Metrological Verification Station	28/10/2019	27/10/2022
88	Lianghekou Hydroelectric Plant	6066641321 9	DSSD1 32	0.5S	2019050601 2020050601	Ebian Measurement Calibration Station	06/05/2019 06/05/2020	05/05/2020 05/05/2021
95	Jinghong City Chuangye Hydropower Station	0111070502 24	DSSD3 000	0.5S	/	Jinghong Power Supply Limited Company	07/05/2019 07/05/2020	06/05/2020 06/05/2021
96	Yingjiang Husa River 5th Stage Hydropower Plant	0800020087 88	DSSD1 03F4	0.5S	Lindianjijian Neng zi [2019] No. 008 Lindianjijian Neng zi [2021] No. 008	Yunnan Lincang Measurement Quality Testing Center	24/03/2019 24/03/2021	23/03/2021 23/03/2023
98	Fugong County Lishadi Hydropower Plant Project	ZZ00063	DTSD3 41	0.2S	2020ZXDdg -00033	Yunnan Insititue of Metrology and Testing Technology	20/01/2020 20/01/2021	19/01/2021 19/01/2022

Table 4-4.2 Calibration information for sampling projects with certification illustration letters

Project No.	Project title	Meter Serial No.	Meter Model Number	Accuracy Class	Calibration Entity	Calibration Date	Calibration Valid Until
23	Sandaoguai Hydroelectric Plant	6012584283	DSSD71	0.2	Chongqing City Wulong County Power Supply Limited Company	30/05/2019	29/05/2021
25	Wulong Guanqiao Hydroelectric Plant	6012584283	DSZ719	0.5	Chongqing City Wulong County Power Supply Limited Company	30/04/2019	29/04/2021
31	Chengmendong Hydroelectric Plant	6012215138	DSSD71	0.2	Chongqing City Wulong County Power Supply Limited Company	01/07/2017	30/06/2021
33	Chushuitang Hydroelectric Plant	2004352Q0066	DSSD331	0.5	Chongqing City Wulong County Power Supply Limited Company	01/08/2018	31/07/2021
34	Shuangqiao Hydroelectric Plant	6012584395	DSSD71	0.5	Chongqing City Wulong County Power Supply Limited Company	01/07/2018	30/06/2021
52	Sihe Hydroelectric Plant	6012105140	DSSD331	0.2	Chongqing City Wulong County Power Supply Limited Company	01/07/2018	30/06/2021
71	Dongliuhe Hydroelectric Plant	6016054920	DSZ188	0.2S	Chongqing City Wulong County Power Supply Limited Company	10/08/2019	09/08/2021

Calibration of major electricity meters

A metrical institute authorized by the Administration of Standard Measurement will periodically carry out the verification of the electricity metering equipment according to relevant national electric industry standards and regulations. After the verification of every meter, the electricity metering equipment is sealed, stamped or by other means closed. Either party shall not unseal, change the structure, layout or any wire connection of the electricity equipment nor manipulate the equipment.

Training

Operational staffs are a crucial element for the GHG information quality control system. Training packages ensure that staffs receive adequate training to collect, and to achieve complete and accurate data necessary for VCU monitoring. All staff should follow this procedure on site prior to performing any monitoring duties for the Grouped Project:

1. Equip relevant staff with necessary mechanical, electric techniques.
2. Teach staff the structure of hydro power plant, and understand the common malfunctions and corresponding solutions.
3. Design emergency plan and get staff familiar with the emergency plan.
4. Organize professional training periodically to maintain and improve the professional skills of operating staff.
5. Additional learning session to comprehend the understanding of the requests of VCS on the monitoring system.
6. Set up monitoring knowledge exam for new staff to control the quality of training program.

Data Management System

This procedure provides details on how data are managed on a complete and accurate level. Data and records are stored and archived according to this procedure.

All monitoring data and records will be archived in electronic documents and paper documents. The project owners will also keep the copies of electricity generation record and sales receipts, The Central Information System Centre at South Pole provides integrated monitoring data services, hence an additional monitoring database is in place to prevent data loss as well as to ensure the consistency of all the data. Data have been input manually by project managers into the Project Management Tool System, which will be described in more detail in the following section. The project database is saved on South Pole's local China server which is synchronized daily with headquarter main server in Zurich to allow access of data between headquarter and regional offices.

PMT- Central Information Control Tool

Technical specifications

South Pole uses a custom-tailored project management software to monitor its project

pipeline. The Project Management Tool (PMT) is a web-based application running on South Pole's web server and is accessible from any computer with Internet access.

Connections between clients and the web server are secured with 128-bit SSL encryption. The backend is an apache web server, the web application is written in PHP5, and data is stored in a MySQL database. Utilizing mainstream open source technology, South Pole guarantees flexibility and reliability with regards to development and maintenance.

As South Pole has nine offices on four continents as of today, quality of the Internet connections varies significantly. To ensure optimal speed, the PMT utilizes techniques such as AJAX and asynchronous requests to load content on demand and provide short-loading times even with several hundreds of projects displayed at the same time.

The PMT's server-client architecture guarantees that all data is kept consistent and always up to date for each user. The separation of presentation and data allows for flexible interfaces with other applications, easy data export and automated backups of sensitive and valuable project data.

Features

The PMT can be used to track individual projects under various standards, with different credit types and crediting periods, as well as groups of projects or entire pipelines of projects.

On the project level, tools such as milestone management, a sophisticated comment and notification system to facilitate communication between different team members, deadline alerts, etc. allow project managers and supervisors to meet targets and deadlines and monitor or project both past and future amount of emission reductions resulting out of a project.

One level above, various features allow grouping and manipulating several projects together, with combined overviews on milestone deadlines, generated emission reductions, and applied standards.

Data can be directly exported to Excel from within the PMT, both for individual projects as well as for groups of projects, to run custom evaluations or to visualize data.

Project identification

Our PMT system created 88 project tags. Each project has its identical project number, a brief project description, project owner's information, methodology and other information, vintage volume and milestones and related payment.

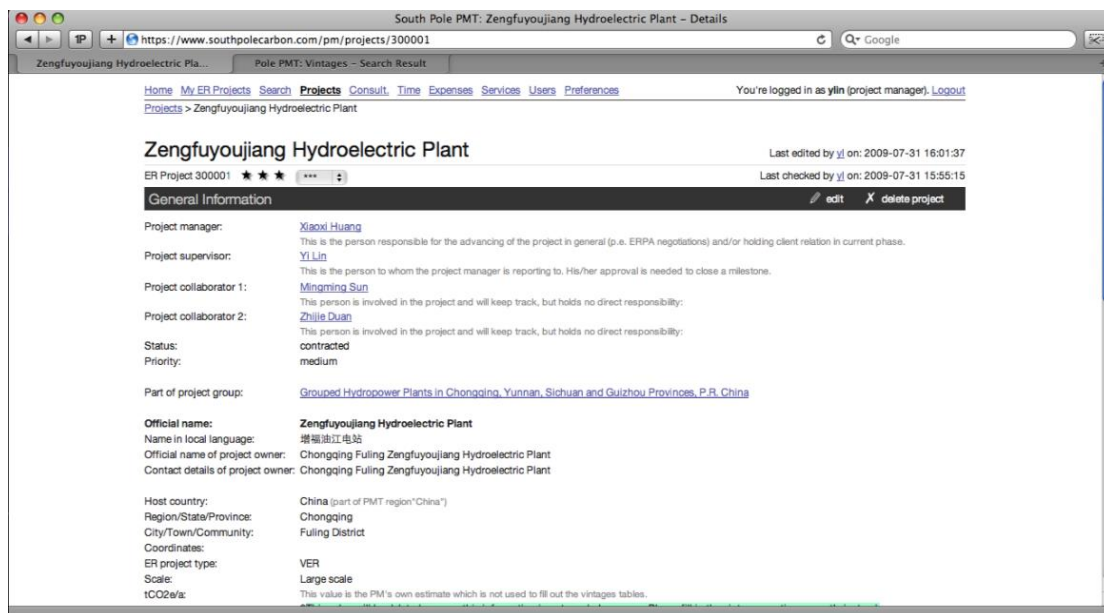


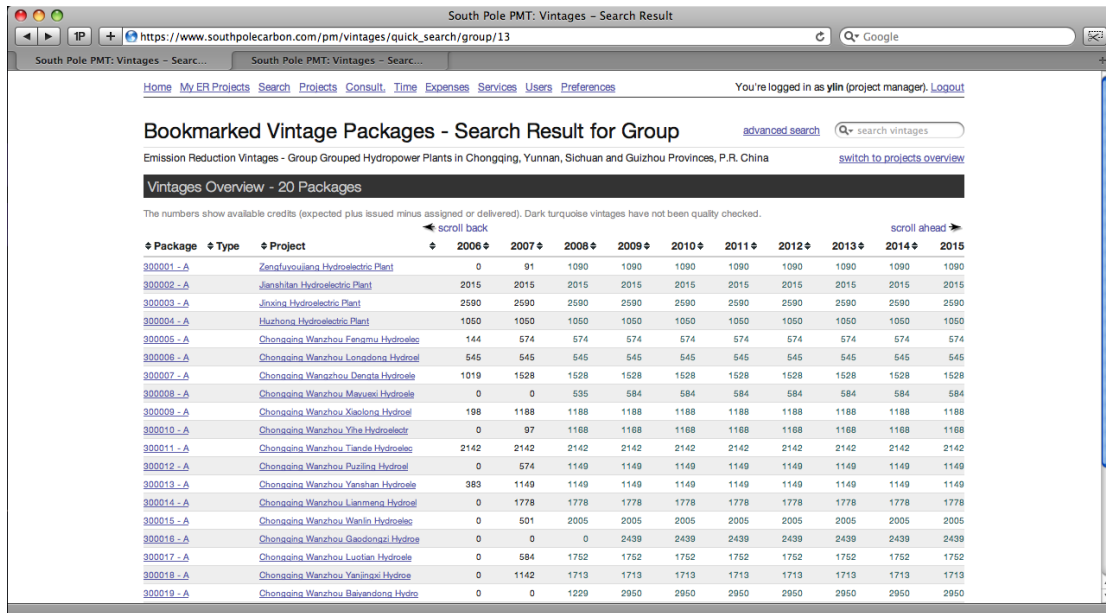
Figure-4-4 Project identification

Quantity Assurance

Overview of vintages and emission reduction over crediting period

The Project Management Tool has a vintages review function. The PMT is able to store the existing emission reductions and estimate the foreseeable emission reductions. The vintage review function is linked to each project tag, which means any updates or/and changes by project managers regarding the project's emission reductions will be reflected in the vintages review section. Vintages review function allows the project manager and Implementation Control and Technical Teams to overview the entire Grouped Project and conduct spot checks. Aggregation for emission reductions of annual total, emission reductions of crediting period total etc. is applicable.

At the end of each crediting period, the emission reduction of the 88 projects will be spot checked with electronic copies of electrical sale invoices.



South Pole PMT: Vintages - Search Result

Home My ER Projects Search Projects Consult Time Expenses Services Users Preferences You're logged in as yilin (project manager). Logout

Bookmarked Vintage Packages - Search Result for Group [advanced search](#)

Emission Reduction Vintages - Group Grouped Hydropower Plants in Chongqing, Yunnan, Sichuan and Guizhou Provinces, P.R. China [switch to projects overview](#)

Vintages Overview - 20 Packages

The numbers show available credits (expected plus issued minus assigned or delivered). Dark turquoise vintages have not been quality checked.

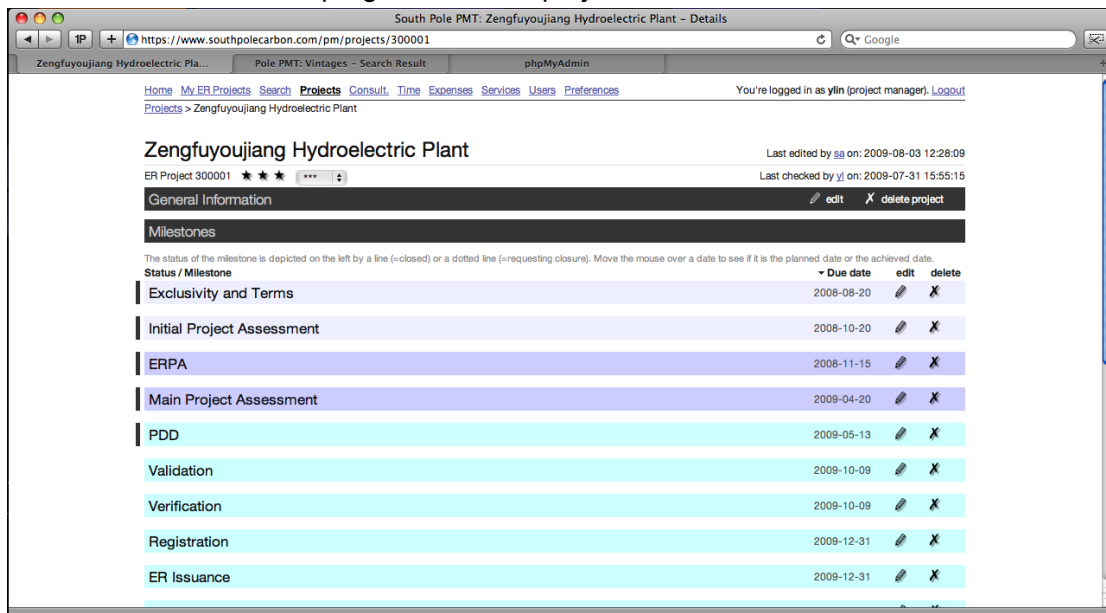
← scroll back scroll ahead →

Package	Type	Project	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
300001 - A		Zengfuyoujiang Hydroelectric Plant	0	91	1090	1090	1090	1090	1090	1090	1090	1090
300002 - A		Jianshan Hydroelectric Plant	2015	2015	2015	2015	2015	2015	2015	2015	2015	2015
300003 - A		Jinsha Hydroelectric Plant	2590	2590	2590	2590	2590	2590	2590	2590	2590	2590
300004 - A		Huoshan Hydroelectric Plant	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050
300005 - A		Chongqing Wanzhou Fangmu Hydroelec	144	574	574	574	574	574	574	574	574	574
300006 - A		Chongqing Wanzhou Longdong Hydroel	545	545	545	545	545	545	545	545	545	545
300007 - A		Chongqing Wanzhou Dengta Hydroele	1019	1528	1528	1528	1528	1528	1528	1528	1528	1528
300008 - A		Chongqing Wanzhou Maoyue Hydroele	0	0	535	584	584	584	584	584	584	584
300009 - A		Chongqing Wanzhou Xiaolun Hydroel	198	1188	1188	1188	1188	1188	1188	1188	1188	1188
300010 - A		Chongqing Wanzhou Yhe Hydroelectr	0	97	1168	1168	1168	1168	1168	1168	1168	1168
300011 - A		Chongqing Wanzhou Tiande Hydroele	2142	2142	2142	2142	2142	2142	2142	2142	2142	2142
300012 - A		Chongqing Wanzhou Puziling Hydroel	0	574	1149	1149	1149	1149	1149	1149	1149	1149
300013 - A		Chongqing Wanzhou Yanshan Hydroele	383	1149	1149	1149	1149	1149	1149	1149	1149	1149
300014 - A		Chongqing Wanzhou Lianmeng Hydroel	0	1778	1778	1778	1778	1778	1778	1778	1778	1778
300015 - A		Chongqing Wanzhou Wanlin Hydroelec	0	501	2005	2005	2005	2005	2005	2005	2005	2005
300016 - A		Chongqing Wanzhou Gaodongzi Hydroe	0	0	2439	2439	2439	2439	2439	2439	2439	2439
300017 - A		Chongqing Wanzhou Luotian Hydroele	0	584	1752	1752	1752	1752	1752	1752	1752	1752
300018 - A		Chongqing Wanzhou Yanjinxi Hydroe	0	1142	1713	1713	1713	1713	1713	1713	1713	1713
300019 - A		Chongqing Wanzhou Baiyandong Hydroe	0	0	1229	2950	2950	2950	2950	2950	2950	2950

Figure-4-5 Overview of vintages and emission reduction over crediting period

Time management-Milestone featuring

Once a project is established in the PMT, all the milestones of the project identifying the critical project path of the project cycle are automatically in place. For each milestone, PMT automatically inserts an estimate of the plausible milestones completion time, and indicated the due dates to the project manager. A milestones overview feature lets supervisors keep track of statistics of the estimated milestones completion time compared to the actual milestones implementing time, which will be preserved as part of project history for later project management evaluation. This feature is the key time management tool; it allows project managers and the supervisors to always be aware of the deadlines and trace the status and progress of each project.



South Pole PMT: Zengfuyoujiang Hydroelectric Plant - Details

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Zengfuyoujiang Hydroelectric Plant

ER Project 300001 ★ ★ ★ Last edited by [y](#) on: 2009-08-03 12:28:09

Last checked by [y](#) on: 2009-07-31 15:55:15

General Information [edit](#) [delete project](#)

Milestones

The status of the milestone is depicted on the left by a line (=closed) or a dotted line (=requesting closure). Move the mouse over a date to see if it is the planned date or the achieved date.

Status / Milestone	Due date	edit	delete
Exclusivity and Terms	2008-08-20	edit	X
Initial Project Assessment	2008-10-20	edit	X
ERPA	2008-11-15	edit	X
Main Project Assessment	2009-04-20	edit	X
PDD	2009-05-13	edit	X
Validation	2009-10-09	edit	X
Verification	2009-10-09	edit	X
Registration	2009-12-31	edit	X
ER Issuance	2009-12-31	edit	X

Figure 4-6 Time management-Milestone featuring

Quality Assurance- quality check and commenting

Projects have to pass each single step consisting of Initial Project Assessment, Main Project Assessment, ERPA, validation, monitoring and verification milestones of the project cycle.

A project manager can request for closing of a project milestone if tasks of such milestone have been accomplished subjected to South Pole's company internal guidance. A quality stamp by the Implementation Control and Technical Team must be given to close milestone completely and to leave way to process the next milestones.

The comment function is designed to identify problems and to collect ways of possible solutions within the project management team. When one comment is inserted into the PMT entry of a specific project, subsequently the notification will appear on the PMT home screen of the corresponding project manager. If project manager has new findings regarding the project, the comment system is able to feedback updates on the project to the quality control team. The project manager can also trace which person raised the question and follow up a further discussion if necessary.

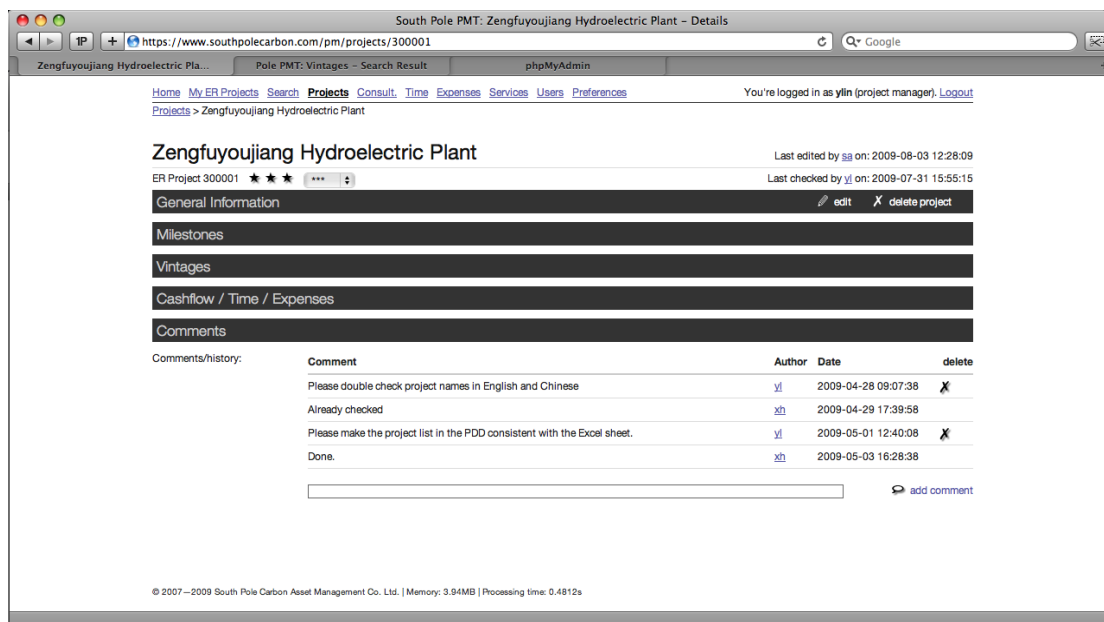


Figure 4-7 Quality Assurance- quality check and commenting

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

According to methodology AMS-I.D (Version 18.0), the baseline emissions of the project are the product of the baseline emissions factor (EF_y in tCO_2/MWh), calculated according to the “Tool to calculate the emission factor for an electricity system” (Version 05.0), times the electricity exported to the grid by the project activity ($EG_{BL,y}$ in MWh):

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

Grid Emission Factor was calculated in PD to be 0.5003 $t CO_2e/MWh$ for Central China Power Grid and 0.4975 tCO_2e/MWh for Southern China Power Grid. These grid emission factors are determined ex-ante and fixed during the crediting period.

During this monitoring period, the baseline emission reductions for Central China Power Grid is:

$$BE = EG \times EF = 479,797.043 \times 0.5003 = 239,928 \text{ tCO}_2\text{e/year}$$

During this monitoring period, the baseline emission reductions for South China Power Grid is:

$$BE = EG \times EF = 248,087.181 \times 0.4975 = 123,405 \text{ tCO}_2\text{e/year}$$

The total baseline emissions for the Grouped Project during this monitoring period amounts therefore to 363,333 tCO_2e .

5.2 Project Emissions

According to Methodology, the project emissions shall be calculated by the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} \quad (\text{Equation 1})$$

Where:

PE_y	Project emissions in year y (tCO_2e/yr);
$PE_{FF,y}$	Project emissions from fossil fuel consumption in year y (tCO_2/yr);
$PE_{GP,y}$	Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO_2e/yr);
$PE_{HP,y}$	Project emissions from water reservoirs of hydro power plants in year y (tCO_2e/yr);

The project does not involve the fossil fuel consumption and geothermal power, so $PE_{FF,y}=0$, $PE_{GP,y}=0$. For hydro power project activities that result in new reservoirs and hydro power project activities that result in the increase of existing reservoirs, project proponents shall account for project emissions, estimated as follows:

- a) If the power density (PD) of power plant is greater than 4 W/m² and less than or equal to 10 W/m²:

$$PE_{HP,y} = \frac{EF_{Res} \cdot TEG_y}{1000} \quad (\text{Equation 2})$$

Where:

$PE_{HP,y}$	Project emissions from water reservoirs (tCO ₂ e/yr);
EF_{Res}	Default emission factor for emissions from reservoirs, and the default value as per EB23 is 90 kg CO ₂ e/MWh;
TEG_y	Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y (MWh);

- b) If the power density (PD) of the power plant is greater than 10 W/ m²

$$PE_{HP,y}=0 \quad (\text{Equation 3})$$

The PD of the project activity is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \quad (\text{Equation 4})$$

Where:

PD	Power density of the project activity (W/m ²);
Cap_{PJ}	Installed capacity of the hydro power plant after the implementation of the project activity (W);
Cap_{BL}	Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero;
A_{PJ}	Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m ²);
A_{BL}	Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m ²). For new reservoirs, this value is zero;

There are only two hydropower plants under the grouped project having reservoirs (74_Puti 1 and 75_Puti 2), and the power densities of the two individual components are

shown to be 18 W/m² and 59 W/m².⁶ The other projects do not involve the reservoir, so $PE_{HP,y}=0$. Therefore, project Emissions = 0

5.3 Leakage

According to AMS-I.D Version 18.0, there were neither energy generating equipment transferred from another activity nor existing equipment transferred to another activity, so no leakage calculation is required for the proposed project activity.

Leakage = 0

5.4 Net GHG Emission Reductions and Removals

The calculated net GHG emission reductions achieved by the project activity within the covered monitoring period amount to 363,333 tCO₂e in total, of which 239,928 tCO₂e occurred in the Central China Power Grid and 123,405 tCO₂e in the Southern China Power Grid. A summary of key results based on aggregated data on a yearly basis are provided in the table below. Detailed calculation processes for each individual project please see the ER calculation spreadsheets provided separately.

Summary for 88 sub-projects under the Grouped Project:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	290,096	0	0	290,096
Year 2021	73,237	0	0	73,237
Total	363,333	0	0	363,333

1 Zengfuyoujiang Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)

⁶ 74_Puti 1 and 75_Puti 2 plants are newly built hydropower plant, hence A_{BL} and Cap_{BL} of this two plants are zero. The A_{PJ} of these two plants are 0.334km² and 0.161 km² respectively. The Cap_{BL} of these two projects are 6MW and 9.5 MW. Therefore, the PD of 74_Puti 1 plant is 18W/m² = $(6-0) \cdot 10^6 / (0.334-0) \cdot 10^6$, the PD of 75_Puti 2 plant is 59W/m² = $(9.5-0) \cdot 10^6 / (0.161-0) \cdot 10^6$.

Year 2020	0	0	0	0
Year 2021	0	0	0	0
Total	0	0	0	0

2 Jianshitan Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	971	0	0	971
Year 2021	150	0	0	150
Total	1121	0	0	1121

3 Jinxing Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1190	0	0	1190
Year 2021	430	0	0	430
Total	1620	0	0	1620

4 Huzhong Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	4900	0	0	4900
Year 2021	1488	0	0	1488
Total	6388	0	0	6388

5 Chongqing Wanzhou Fengmu Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	215	0	0	215

Year 2021	93	0	0	93
Total	308	0	0	308

6 Chongqing Wanzhou Longdong Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	285	0	0	285
Year 2021	60	0	0	60
Total	345	0	0	345

7 Chongqing Wanzhou Dengda Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	453	0	0	453
Year 2021	82	0	0	82
Total	535	0	0	535

9 Chongqing Wanzhou Xiaolong Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	539	0	0	539
Year 2021	122	0	0	122
Total	661	0	0	661

10 Chongqing Wanzhou Yihe Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	382	0	0	382
Year 2021	82	0	0	82

Total	464	0	0	464
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11 Chongqing Wanzhou Tiande Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	571	0	0	571
Year 2021	138	0	0	138
Total	709	0	0	709

12 Chongqing Wanzhou Puziling Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	514	0	0	514
Year 2021	91	0	0	91
Total	605	0	0	605

13 Chongqing Wanzhou Yanshan Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	792	0	0	792
Year 2021	160	0	0	160
Total	952	0	0	952

15 Chongqing Wanzhou Wanlin Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	732	0	0	732
Year 2021	125	0	0	125
Total	857	0	0	857

18 Chongqing Wanzhou Yanjingxi Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	652	0	0	652
Year 2021	144	0	0	144
Total	796	0	0	796

21 Chongqing Wanzhou Xianfeng Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	4808	0	0	4808
Year 2021	975	0	0	975
Total	5783	0	0	5783

22 Heba Hydroelectric Plants

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	590	0	0	590
Year 2021	215	0	0	215
Total	805	0	0	805

23 Sandaoguai Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	155	0	0	155
Year 2021	44	0	0	44
Total	199	0	0	199

24 Beiya Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	206	0	0	206
Year 2021	17	0	0	17
Total	223	0	0	223

25 Wulong Guanqiao Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	177	0	0	177
Year 2021	66	0	0	66
Total	243	0	0	243

27 Qingtongxi Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	328	0	0	328
Year 2021	99	0	0	99
Total	427	0	0	427

28 Heping Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	383	0	0	383
Year 2021	114	0	0	114
Total	497	0	0	497

29 Guanziya Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	0	0	0	0
Year 2021	0	0	0	0
Total	0	0	0	0

30 Baiyangping Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	419	0	0	419
Year 2021	57	0	0	57
Total	476	0	0	476

31 Chengmendong Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	926	0	0	926
Year 2021	303	0	0	303
Total	1229	0	0	1229

32 Shuanglong Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	551	0	0	551
Year 2021	117	0	0	117
Total	668	0	0	668

33 Chushuitang Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	929	0	0	929
Year 2021	268	0	0	268
Total	1197	0	0	1197

34 Shuangqiao Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	326	0	0	326
Year 2021	80	0	0	80
Total	406	0	0	406

35 Shiqiao Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	507	0	0	507
Year 2021	142	0	0	142
Total	649	0	0	649

36 Shuanglian Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	680	0	0	680
Year 2021	261	0	0	261
Total	941	0	0	941

37 Bajia Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	797	0	0	797
Year 2021	316	0	0	316
Total	1113	0	0	1113

38 Xinqiao Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	898	0	0	898
Year 2021	218	0	0	218
Total	1116	0	0	1116

39 Luchi Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	480	0	0	480
Year 2021	117	0	0	117
Total	597	0	0	597

40&48 Xiangyang Stage III & I Hydroelectric Plants

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1811	0	0	1811
Year 2021	342	0	0	342
Total	2153	0	0	2153

41 Xiangyun Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	855	0	0	855
Year 2021	236	0	0	236
Total	1091	0	0	1091

42 Hongshan Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	396	0	0	396
Year 2021	79	0	0	79
Total	475	0	0	475

44 Yong'an Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	861	0	0	861
Year 2021	212	0	0	212
Total	1073	0	0	1073

45 Suokousi Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	825	0	0	825
Year 2021	65	0	0	65
Total	890	0	0	890

46 Xinli Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	703	0	0	703
Year 2021	282	0	0	282
Total	985	0	0	985

47 Caijiagou Stage III Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1358	0	0	1358
Year 2021	360	0	0	360
Total	1718	0	0	1718

49 Cheqingyan Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1,729	0	0	1,729
Year 2021	326	0	0	326
Total	2,055	0	0	2,055

50 Lianghekou Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1,797	0	0	1,797
Year 2021	440	0	0	440
Total	2,237	0	0	2,237

51 Wuhe Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	747	0	0	747
Year 2021	197	0	0	197
Total	944	0	0	944

52 Sihe Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	2,272	0	0	2,272
Year 2021	728	0	0	728
Total	3,000	0	0	3,000

53 Shilingyan Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	716	0	0	716
Year 2021	99	0	0	99
Total	815	0	0	815

54 Nanmu Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1,594	0	0	1,594
Year 2021	408	0	0	408
Total	2,002	0	0	2,002

55 Canglong Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1,456	0	0	1,456
Year 2021	469	0	0	469
Total	1,925	0	0	1,925

56 Daheba Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	3,438	0	0	3,438
Year 2021	775	0	0	775
Total	4,213	0	0	4,213

57 Hexigou Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	2,129	0	0	2,129
Year 2021	527	0	0	527
Total	2,656	0	0	2,656

58 Yanchanghe Stage III Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1,996	0	0	1,996
Year 2021	634	0	0	634
Total	2,630	0	0	2,630

59 Muzonghe Stage IV Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	2,634	0	0	2,634
Year 2021	860	0	0	860
Total	3,494	0	0	3,494

60 Dengta Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1,059	0	0	1,059
Year 2021	230	0	0	230
Total	1,289	0	0	1,289

61 Banqiao Stage II Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	2,203	0	0	2,203
Year 2021	679	0	0	679
Total	2,882	0	0	2,882

62 Shuangchahe Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	2,049	0	0	2,049
Year 2021	586	0	0	586
Total	2,635	0	0	2,635

63 Songshigou Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1,241	0	0	1,241
Year 2021	265	0	0	265
Total	1,506	0	0	1,506

65 Shujiahe Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	2,333	0	0	2,333
Year 2021	447	0	0	447
Total	2,780	0	0	2,780

66 Yangyan Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	2,780	0	0	2,780
Year 2021	485	0	0	485
Total	3,265	0	0	3,265

67 Baiguo Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	5,918	0	0	5,918
Year 2021	541	0	0	541
Total	6,459	0	0	6,459

68 Longqiao Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	7,099	0	0	7,099
Year 2021	1,552	0	0	1,552
Total	8,651	0	0	8,651

69 Baiyang Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	8,067	0	0	8,067
Year 2021	472	0	0	472
Total	8,539	0	0	8,539

70 Xinmin Tailwater Stage II Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1,987	0	0	1,987
Year 2021	540	0	0	540
Total	2,527	0	0	2,527

71 Dongliuhe Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	2,325	0	0	2,325
Year 2021	466	0	0	466
Total	2,791	0	0	2,791

72 Dahegou Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	3,277	0	0	3,277
Year 2021	776	0	0	776
Total	4,053	0	0	4,053

73 Xinmin Stage II Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	9,548	0	0	9,548
Year 2021	2,384	0	0	2,384
Total	11,932	0	0	11,932

74 Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	5,424	0	0	5,424
Year 2021	1,553	0	0	1,553
Total	6,977	0	0	6,977

75 Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	9,675	0	0	9,675
Year 2021	2,579	0	0	2,579
Total	12,254	0	0	12,254

76 Wumaxi Stage I Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1,513	0	0	1,513
Year 2021	284	0	0	284
Total	1,797	0	0	1,797

77 Mozigou Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	1,433	0	0	1,433
Year 2021	443	0	0	443
Total	1,876	0	0	1,876

78 Mayihe Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	2,234	0	0	2,234
Year 2021	774	0	0	774
Total	3,008	0	0	3,008

79 Jinyatan Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	4,141	0	0	4,141
Year 2021	791	0	0	791
Total	4,932	0	0	4,932

80 Toudaoshui Hydroelectric Station

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	4,282	0	0	4,282
Year 2021	1,295	0	0	1,295
Total	5,577	0	0	5,577

81 Sanhui Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	8,790	0	0	8,790
Year 2021	1,625	0	0	1,625
Total	10,415	0	0	10,415

82 Yunwushan Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	9,039	0	0	9,039
Year 2021	2,418	0	0	2,418
Total	11,457	0	0	11,457

83 Gongjiagou Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	0	0	0	0
Year 2021	0	0	0	0
Total	0	0	0	0

84 Chahe Stage III Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	9,942	0	0	9,942
Year 2021	2,875	0	0	2,875
Total	12,817	0	0	12,817

85 Daihuanggou Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	12,547	0	0	12,547
Year 2021	3,892	0	0	3,892
Total	16,439	0	0	16,439

86 Gaoqiaohe Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	19,716	0	0	19,716
Year 2021	6,681	0	0	6,681
Total	26,397	0	0	26,397

87 Zhuyeshan Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	9,166	0	0	9,166
Year 2021	1,317	0	0	1,317
Total	10,483	0	0	10,483

88 Lianghekou Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	20,175	0	0	20,175
Year 2021	6,210	0	0	6,210
Total	26,385	0	0	26,385

90 Dabaishu Hydroelectric Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	0	0	0	0
Year 2021	0	0	0	0
Total	0	0	0	0

91&92 Dashi Stage III & Dashi Stage II Hydroelectric Plants

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	0	0	0	0
Year 2021	0	0	0	0
Total	0	0	0	0

93 Yunnan Midu County Taishanhe Hydropower Station

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	0	0	0	0
Year 2021	0	0	0	0
Total	0	0	0	0

94 Zhenyuan County Xiaojiehe Hydropower Station

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	7,012	0	0	7,012
Year 2021	1,894	0	0	1,894
Total	8,906	0	0	8,906

95 Jinghong City Chuangye Hydropower Staion

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	14,215	0	0	14,215
Year 2021	3,606	0	0	3,606
Total	17,821	0	0	17,821

96 Yingjiang Husa River 5th Stage Hydropower Plant

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	10,378	0	0	10,378
Year 2021	2,300	0	0	2,300
Total	12,678	0	0	12,678

97 Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	14,782	0	0	14,782
Year 2021	3,409	0	0	3,409
Total	18,191	0	0	18,191

98 Fugong County Lishadi Hydropower Plant Project

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2020	23,073	0	0	23,073
Year 2021	6,255	0	0	6,255
Total	29,328	0	0	29,328

Summary of net export electricity during this monitoring period

Year	CCPG EG (MWh)	SCPG EG (MWh)	Combined of both grids EG (MWh)
Year 2020	383,262.91	197,851.91	581,114.82
Year 2021	96,534.13	50,235.27	146,769.40
Total	479,797.04	248,087.18	727,884.22

Summary of emission reductions during this monitoring period

Year	CCPG ER (tCO ₂ e)	SCPG ER (tCO ₂ e)	Combined of both grids ER (tCO ₂ e)
Year 2020	191,677.00	98,419.00	290,096.00
Year 2021	48,251.00	24,986.00	73,237.00
Total	239,928.00	123,405.00	363,333.00

APPENDIX 1: IMPLEMENTAION DATES FOR EACH INDIVIDUAL PROJECT PLANT

Serial No.	Project Title	Date of Commissionin g	Continued operation period (Years)
1	Zengfuyoujiang Hydroelectric Plant	2007-12-13	25
2	Jianshitan Hydroelectric Plant	2005-10-19	25
3	Jinxing Hydroelectric Plant	2005-11-10	25
4	Huzhong Hydroelectric Plant	2005-11-01	25
5	Chongqing Wanzhou Fengmu Hydroelectric Plant	2006-06-25	20
6	Chongqing Wanzhou Longdong Hydroelectric Plant	2005-09-13	20
7	Chongqing Wanzhou Dengta Hydroelectric Plant	2005-12-13	20
9	Chongqing Wanzhou Xiaolong Hydroelectric Plant	2006-12-20	20
10	Chongqing Wanzhou Yihe Hydroelectric Plant	2007-12-22	20
11	Chongqing Wanzhou Tiande Hydroelectric Plant	2003-10-01	20
12	Chongqing Wanzhou Puziling Hydroelectric Plant	2007-01-05	20
13	Chongqing Wanzhou Yanshan Hydroelectric Plant	2006-08-05	20
15	Chongqing Wanzhou Wanlin Hydroelectric Plant	2007-04-19	20
18	Chongqing Wanzhou Yanjingxi Hydroelectric Plant	2006-12-25	20
21	Chongqing Wanzhou Xianfeng Hydroelectric Plant	2007-03-15	20
22	Heba Hydroelectric Plant	2005-12-09	25
23	Sandaoguai Hydroelectric Plant	2005-12-12	25
24	Beiya Hydroelectric Plant	2003-10-13	25
25	Wulong Guanqiao Hydroeletric Plant	2003-06-15	25
27	Qingtongxi Hydroelectric Plant	2004-05-10	25
28	Heping Hydroelectric Plant	2005-09-11	25
29	Guanziya Hydroelectric Plant	2003-06-06	25
30	Baiyangping Hydroelectric Plant	2003-06-05	25
31	Chengmending Hydroelectric Plant	2005-01-28	25
32	Shuanglong Hydroelectric Plant	2003-04-03	25
33	Chushuitang Hydroelectric Plant	2005-12-23	25
34	Shuangqiao Hydroelectric Plant	2007-12-19	25
35	Shiqiao Hydroelectric Plant	2005-10-09	25
36	Shuanglian Hydroelectric Plant	2004-08-01	25
37	Baijia Hydroelectric Plant	2004-10-04	25
38	Xinqiao Hydroelectric Plant	2004-04-14	25
39	Luchi Hydroelectric Plant	2004-12-28	25
40	Xiangyang Stage III Hydroelectric Plant	2005-10-17	25
41	Xiangyun Hydroelectric Plant	2005-05-11	25

42	Hongshan Hydroelectric Plant	2006-02-21	25
44	Yong'an Hydroelectric Plant	2007-04-23	25
45	Suokousi Hydroelectric Plant	2005-08-09	25
46	Xinli Hydroelectric Plant	2004-04-18	25
47	Caijiagou Stage III Hydroelectric Plant	2004-05-11	25
48	Xiangyang Stage I Hydroelectric Plant	2005-07-10	25
49	Cheqingyan Hydroelectric Plant	2003-10-10	25
50	Lianghekou Hydroelectric Plant	2004-11-12	25
51	Wuhe Hydroelectric Plant	2006-08-18	25
52	Sihe Hydroelectric Plant	2006-01-17	25
53	Shilingyan Hydroelectric Plant	2003-06-26	25
54	Nanmu Hydroelectric Plant	2004-10-15	25
55	Canglong Hydroelectric Plant	2004-10-24	20
56	Daheba Hydroelectric Plant	2004-10-17	25
57	Heixigou Hydroelectric Plant	2002-12-01	20
58	Yanchanghe Stage III Hydroelectric Plant	2005-12-21	25
59	Muzonghe Stage IV Hydroelectric Plant	2003-12-30	25
60	Dengta Hydroelectric Plant	2004-10-03	25
61	Banqiao Stage II Hydroelectric Plant	2004-09-02	25
62	Shuangchahe Hydroelectric Plant	2005-12-02	25
63	Songshigou Hydroelectric Plant	2005-07-15	25
65	Shujiahe Hydroelectric Plant	2004-08-01	25
66	Yangyan Hydroelectric Plant	2003-04-09	25
67	Baiguo Hydroelectric Plant	2003-06-16	20
68	Longqiao Hydroelectric Plant	2004-04-11	25
69	Baiyang Hydroelectric Plant	2003-06-17	20
70	Xinmin Tailwater Stage II Hydroelectric Plant	2004-03-21	25
71	Dongliuhe Hydroelectric Plant	2004-08-17	25
72	Dahegou Hydroelectric Plant	2007-01-20	20
73	Xinmin Stage II Hydroelectric Plant	2004-05-25	25
74	Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project	2004-06-12	20
75	Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project	2004-06-02	20
76	Wumaxi Stage I Hydroelectric Plant	2004-06-25	20
77	Mozigou Hydroelectric Plant	2005-01-09	20
78	Mayihe Hydroelectric Plant	2005-01-16	20
79	Jinyatan Hydroelectric Plant	2005-05-06	20
80	Toudaoshui Hydroelectric Station	2004-06-26	20
81	Sanhui Hydroelectric Plant	2005-04-05	20
82	Qingshuihe Stage I Hydroelectric Plant	2006-12-31	20
83	Gongjiagou Hydroelectric Plant	2005-07-30	20
84	Chahe Stage III Hydroelectric Plant	2005-12-24	20
85	Daihuanggou Hydroelectric Plant	2005-08-17	20
86	Gaoqiaohe Hydroelectric Plant	2003-06-19	20
87	Zhuyeshan Hydroelectric Plant	2003-04-05	30
88	Lianghekou Hydroelectric Plant	2003-12-19	20
90	Dabaishu Hydroelectric Plant	2004-10-22	20

91	Dashi Stage III Hydroelectric Plant	2005-09-11	20
92	Dashi Stage II Hydroelectric Plant	2004-06-30	20
93	Yunnan Midu County Taishanhe Hydropower Station	2008-08-12	20
94	Zhenyuan County Xiaojiehe Hydropower Station	2008-03-05	30
95	Jinghong City Chuangye Hydropower Station	2006-08-18	20
96	Yingjiang Husa River 5th Stage Hydropower Plant	2006-09-09	20
97	Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station	2005-05-21	30
98	Fugong County Lishadi Hydropower Plant Project	1900-01-09	20

APPENDIX 2: COMPARISON TABLE FOR INDIVIDUAL PROJECT PLANT AND ITS PROJECT OWNER NAME

No.	Individual Project Title	Individual Project Owner Name
1	Zengfuyoujiang Hydroelectric Plant	Chongqing Fuling Zengfuyoujiang Hydroelectric Plant
2	Jianshitan Hydroelectric Plant	Chongqing Fuling Huanglong Hydroelectric Plant
3	Jinxing Hydroelectric Plant	Pengshui Runxi Jinxing Hydroelectric Plant of Fuling Chuandong Hydropower Co., Ltd.
4	Huzhong Hydroelectric Plant	Pengshui Shengda Hydropower Co., Ltd.
5	Chongqing Wanzhou Fengmu Hydroelectric Plant	Wanzhou Yongfa Water Conservancy Development Co., Ltd.
6	Chongqing Wanzhou Longdong Hydroelectric Plant	Wanzhou Yongfa Water Conservancy Development Co., Ltd.
7	Chongqing Wanzhou Dengta Hydroelectric Plant	Wanzhou Huiyin Hydropower Development Co., Ltd.
9	Chongqing Wanzhou Xiaolong Hydroelectric Plant	Wanzhou Xiaolong Hydropower Development Co., Ltd.
10	Chongqing Wanzhou Yihe Hydroelectric Plant	Wanzhou Fengyu Hydropower Development Co., Ltd.
11	Chongqing Wanzhou Tiande Hydroelectric Plant	Chongqing Wanzhou Electric Development Co., Ltd.
12	Chongqing Wanzhou Puziling Hydroelectric Plant	Wanzhou Zhende Hydropower Development Co., Ltd.
13	Chongqing Wanzhou Yanshan Hydroelectric Plant	Wanzhou Yanshan Hydropower Development Co., Ltd.
15	Chongqing Wanzhou Wanlin Hydroelectric Plant	Wanzhou Wanlin Hydroelectric Plant
18	Chongqing Wanzhou Yanjingxi Hydroelectric Plant	Wanzhou Zhende Hydropower Development Co., Ltd.
21	Chongqing Wanzhou Xianfeng Hydroelectric Plant	Chongqing Wanzhou Xianfeng Hydroelectric Plant
22	Heba Hydroelectric Plant	Wulong Chepanchengmending Hydroelectric Plant
23	Sandaoguai Hydroelectric Plant	Wulong Yajiang Longbao Hydroelectric Plant
24	Beiya Hydroelectric Plant	Wulong Runlong Maintenance Company
25	Wulong Guanqiao Hydroelectric Plant	Wulong Guanqiao Hydroelectric Plant
27	Qingtongxi Hydroelectric Plant	Wulong Qingtongxi Hydroelectric Plant

28	Heping Hydroelectric Plant	Wulong Heping Hydroelectric Plant
29	Guanziya Hydroelectric Plant	Wulong Guanziya Hydroelectric Plant
30	Baiyangping Hydroelectric Plant	Wulong Hongchao Hydropower Development Co., Ltd.
31	Chengmending Hydroelectric Plant	Wulong Chepanchengmending Hydroelectric Plant
32	Shuanglong Hydroelectric Plant	Wulong Tukan Shuanglong Hydroelectric Plant
33	Chushuitang Hydroelectric Plant	Wulong Chushuitang Hydroelectric Plant
34	Shuangqiao Hydroelectric Plant	Wulong Shuangqiao Hydroelectric Plant
35	Shiqiao Hydroelectric Plant	Wulong Longyuan Science & Technology Development Co., Ltd.
36	Shuanglian Hydroelectric Plant	Wulong Boneng Electric Power Co., Ltd.
37	Baijia Hydroelectric Plant	Wulong Boneng Electric Power Co., Ltd.
38	Xinqiao Hydroelectric Plant	Wulong Boneng Electric Power Co., Ltd.
39	Luchi Hydroelectric Plant	Wulong Luchi Hydroelectric Plant
40	Xiangyang Stage III Hydroelectric Plant	Wulong Runlong Maintenance Company
41	Xiangyun Hydroelectric Plant	Wulong Xiangyun Hydroelectric Plant
42	Hongshan Hydroelectric Plant	Wulong Houping Hongshan Hydroelectric Plant
44	Yong'an Hydroelectric Plant	Wulong Haiheng Agriculture Co., Ltd.
45	Suokousi Hydroelectric Plant	Wulong Suokousi Hydroelectric Plant
46	Xinli Hydroelectric Plant	Wulong Canggou Xinli Hydropower Plant
47	Caijiagou Stage III Hydroelectric Plant	Chongqing Wulong Jiangliu Hydroelectric Plant
48	Xiangyang Stage I Hydroelectric Plant	Wulong Runlong Maintenance Company
49	Cheqingyan Hydroelectric Plant	Wulong Yuanquan Hydropower Co., Ltd.
50	Lianghekou Hydroelectric Plant	Wulong Lianghekou Hydroelectric Plant

51	Wuhe Hydroelectric Plant	Wulong Wuhe Hydroelectric Plant
52	Sihe Hydroelectric Plant	Wulong Sihe Hydroelectric Plant
53	Shilingyan Hydroelectric Plant	Wulong Pingqiaooshilingyan Hydroelectric Plant
54	Nanmu Hydroelectric Plant	Wulong Nanmu Hydroelectric Plant
55	Canglong Hydroelectric Plant	Wulong Canglong Hydropower Co., Ltd.
56	Daheba Hydroelectric Plant	Wulong Dexin Hydropower Development Co., Ltd.
57	Heixigou Hydroelectric Plant	Wulong Landi Hydropower Co., Ltd.
58	Yanchanghe Stage III Hydroelectric Plant	Wulong Longfeng Hydropower Co., Ltd.
59	Muzonghe Stage IV Hydroelectric Plant	Wulong Landi Hydropower Co., Ltd.
60	Dengta Hydroelectric Plant	Wulong Jiayuan Hydropower Development Co., Ltd.
61	Banqiao Stage II Hydroelectric Plant	Wulong Haolong Hydropower Plant
62	Shuangchahe Hydroelectric Plant	Wulong Shuangchahe Hydroelectric Plant
63	Songshigou Hydroelectric Plant	Wulong Tukan Songshigou Hydroelectric Plant
65	Shujiahe Hydroelectric Plant	Wulong Zili Electric Power Co., Ltd.
66	Yangyan Hydroelectric Plant	Wulong Sanyuan Hydroelectric Power Development Co., Ltd.
67	Baiguo Hydroelectric Plant	Chongqing Wulong Yuxiang Water Resource Development Co., Ltd.
68	Longqiao Hydroelectric Plant	Wulong Yongxin Hydropower Development Co., Ltd.
69	Baiyang Hydroelectric Plant	Chongqing Wulong Yuxiang Water Resource Development Co., Ltd.
70	Xinmin Tailwater Stage II Hydroelectric Plant	Daozhenxianghe Hydropower Development Co., Ltd.
71	Dongliuhe Hydroelectric Plant	Wulong Boneng Electric Power Co., Ltd.
72	Dahegou Hydroelectric Plant	Chongqing Fengyuanjinhui Hydropower Development Co., Ltd.
73	Xinmin Stage II Hydroelectric Plant	Wulong Yuqian Comprehensive Development Co., Ltd.

74	Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform	Xingyi City Puti Power Co. Ltd
75	Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project	Xingyi City Puti Power Co. Ltd.
76	Wumaxi Stage I Hydroelectric Plant	Yingjing County Sanhe Township Wumaxi Stage I Hydroelectric Station
77	Mozigou Hydroelectric Plant	Yingjing Sanhe Mozigou Hydroelectric Plant
78	Mayihe Hydroelectric Plant	Yingjing Mayihe Hydropower Station
79	Jinyatan Hydroelectric Plant	Yingjing Jinyatan Hydroelectric Plant
80	Toudaoshui Hydroelectric Station	Yingjing County Toudaoshui Hydroelectric Station
81	Sanhui Hydroelectric Plant	Sichuan Yingjing Sanhui Electric Power Co., Ltd.
82	Qingshuihe Stage I Hydroelectric Plant	Sichuan Yingjing Yunwushan Hydropower Co., Ltd.
83	Gongjiagou Hydroelectric Plant	Shimian Zhongxin Electric Power Development Co., Ltd.
84	Chahe Stage III Hydroelectric Plant	Sichuan Yingjing Hengyuan Electric Power Co., Ltd.
85	Daihuanggou Hydroelectric Plant	Yingjing County Sanhe Daihuanggou Hydroelectric Plant
86	Gaoqiaohe Hydroelectric Plant	Sichuan Yingjing Gaoqiaohe Electric Power Co., Ltd.
87	Zhuyeshan Hydroelectric Plant	Sichuan E'bian Heizhugou Hydropower Co., Ltd.
88	Lianghekou Hydroelectric Plant	E'bian Longxin Electric Power Co., Ltd.
90	Dabaishu Hydroelectric Plant	Lingcang Runda Hydropower Co., Ltd.
91	Dashi Stage III Hydroelectric Plant	Lingcang Runda Hydropower Co., Ltd.
92	Dashi Stage II Hydroelectric Plant	Lingcang Runda Hydropower Co., Ltd.
93	Yunnan Midu County Taishanhe Hydropower Station	Midu County Taishan Power Co., Ltd.
94	Zhenyuan County Xiaojiehe Hydropower Station	Zhenyuan Yi, Hani and Lahu Autonomous County Xiaojiehe Hydropower Co., Ltd.
95	Jinghong City Chuangye Hydropower Station	Xishuangbanna Chuangye Hydropower Development Co., Ltd.
96	Yingjiang Husa River 5th Stage Hydropower Plant	Yingjiang County Tianchao Hydropower Co. Ltd.

97	Yunnan Province Jinping County Mengqiao Village Datan Hydropower	Jinping Mengqiao Datan Electricity Co. Ltd.
98	Fugong County Lishadi Hydropower Plant Project	Yunnan Fugong Huatai Electricity Development Co. Ltd

APPENDIX 3: GEOGRAPHICAL COORDINATES FOR EACH INDIVIDUAL PROJECT PLANT

Project No.	Project Title	Geographical Coordinates
1	Zengfuyoujiang Hydroelectric Plant	N 29°32'23.12" E 107° 0'17.29"
2	Jianshitan Hydroelectric Plant	N 29°17'14.67" E 107° 8'18.20"
3	Jinxing Hydroelectric Plant	N 29°39'24.68" E 108°12'19.73"
4	Huzhong Hydroelectric Plant	N 29°25'1.30" E 108° 5'15.67"
5	Chongqing Wanzhou Fengmu Hydroelectric Plant	E 108°48'45" N 30°32'19"
6	Chongqing Wanzhou Longdong Hydroelectric Plant	E 108°50'15" N 30°36'37"
7	Chongqing Wanzhou Dengta Hydroelectric Plant	E 108°39'30" N 30°38'11"
9	Chongqing Wanzhou Xiaolong Hydroelectric Plant	E 108°47'49" N 30°34'59"
10	Chongqing Wanzhou Yihe Hydroelectric Plant	E 108°44'04" N 30°41'42"
11	Chongqing Wanzhou Tiande Hydroelectric Plant	E 108°24'18" N 30°38'5"
12	Chongqing Wanzhou Puziling Hydroelectric Plant	E 108°49'30" N 30°36'08"
13	Chongqing Wanzhou Yanshan Hydroelectric Plant	E 108°19'38" N 30°33'57"
15	Chongqing Wanzhou Wanlin Hydroelectric Plant	E 107°59'41" N 30°46'62"
18	Chongqing Wanzhou Yanjingxi Hydroelectric Plant	E 108°51'08" N 30°38'11"
21	Chongqing Wanzhou Xianfeng Hydroelectric Plant	E 108°41'15" N 30°33'15"
22	Heba Hydroelectric Plant	N 29°19'10.40" E 107°37'32.49"
23	Sandaoguai Hydroelectric Plant	N29°27'58.76" E 107°22'42.11"
24	Beiya Hydroelectric Plant	N29°21'32.47" E 107°38'30.24"
25	Wulong Guanqiao Hydroelectric Plant	N29°24'34.60" E 107°49'54.15"
27	Qingtongxi Hydroelectric Plant	N29°28'14.97" E 108°00'48.54"
28	Heping Hydroelectric Plant	N29°21'10.84" E 107°39'10.98"
29	Guanziya Hydroelectric Plant	N29°22'16.92" E 107°45'14.34"
30	Baiyangping Hydroelectric Plant	N29°26'7.04" E 107°39'41.32"
31	Chengmending Hydroelectric Plant	N 29°18'46.28"

		E 107°37'32.28"
32	Shuanglong Hydroelectric Plant	N29°25'32.33" E 107°40'6.82"
33	Chushuitang Hydroelectric Plant	N29°32'17.48" E 107°56'34.68"
34	Shuangqiao Hydroelectric Plant	N29°32'12.41" E 107°57'10.41"
35	Shiqiao Hydroelectric Plant	N29°10'35.75" E 107°48'48.45"
36	Shuanglian Hydroelectric Plant	N 29°25'29.10" E 108° 02'6.13"
37	Baijia Hydroelectric Plant	N29°33'56.74" E 108°01'40.13"
38	Xinqiao Hydroelectric Plant	N29°31'43.50" E 108° 1'16.73"
39	Luchi Hydroelectric Plant	N 29°23'25.72" E 107°38'10.45"
40	Xiangyang Stage III Hydroelectric Plant	N 29°24'6.59" E 107°53'7.37"
41	Xiangyun Hydroelectric Plant	N29°22'25.91" E 107°38'37.84"
42	Hongshan Hydroelectric Plant	N29°35'55.57" E 108° 2'25.20"
44	Yong'an Hydroelectric Plant	N29°20'32.46" E 107°38'33.45"
45	Suokousi Hydroelectric Plant	N29°24'55.81" E 107°41'19.75"
46	Xinli Hydroelectric Plant	N 29°26'35.99" E 107°58'15.50"
47	Caijiagou Stage III Hydroelectric Plant	N 29°13'27.65" E 107°39'16.46"
48	Xiangyang Stage I Hydroelectric Plant	N 29°25'22.02" E 107°53'27.70"
49	Cheqingyan Hydroelectric Plant	N29°16'1.31" E 107°28'25.89"
50	Lianghekou Hydroelectric Plant	N29°15'41.20" E 107°41'39.47"
51	Wuhe Hydroelectric Plant	N29°31'46.40" E 107°51'53.96"
52	Sihe Hydroelectric Plant	N29°31'52.23" E 107°52'13.95"
53	Shilingyan Hydroelectric Plant	N29°20'52.64" E 107°22'41.42"
54	Nanmu Hydroelectric Plant	N29°33'09.43" E 108°01'28.06"
55	Canglong Hydroelectric Plant	N 29°15'0.97" E 107°40'50.22"
56	Daheba Hydroelectric Plant	N 29°11'18.40" E 107°41'23.72"
57	Heixigou Hydroelectric Plant	N 29°27'19.93" E 108° 0'33.33"
58	Yanchanghe Stage III Hydroelectric Plant	N 29°30'02.34"

		E 107°55'27.63"
59	Muzonghe Stage IV Hydroelectric Plant	N29°27'22.13" E 108° 0'37.04"
60	Dengta Hydroelectric Plant	N29°15'45.45" E 107°38'33.03"
61	Banqiao Stage II Hydroelectric Plant	N29°14'18.52" E 107°39'1.97"
62	Shuangchahe Hydroelectric Plant	N 29°18'16.75" E 107°43'02.48"
63	Songshigou Hydroelectric Plant	N29°23'41.02" E 107°40'40.05"
65	Shujiahe Hydroelectric Plant	N29°20'0.27" E 107°45'39.81"
66	Yangyan Hydroelectric Plant	N 29°27'46.67" E 107°22'55.58"
67	Baiguo Hydroelectric Plant	N29°23'40.76" E 107°47'15.62"
68	Longqiao Hydroelectric Plant	N29°1'33.00" E 107°44'33.27"
69	Baiyang Hydroelectric Plant	N29°19'20.81" E 107°47'37.19"
70	Xinmin Tailwater Stage II Hydroelectric Plant	N29°0'19.33" E 107°46'1.32"
71	Dongliuhe Hydroelectric Plant	Stage 1: N 29° 8'14.40" E 107°43'46.80" Stage 2: N 29° 6'45.46" E 107°44'22.46" Stage 3: N 29° 5'42.15" E 107°44'33.75" Stage 4: N 29° 4'52.89" E 107°43'34.06"
72	Dahegou Hydroelectric Plant	N28°49'14.23" E 107° 8'46.24"
73	Xinmin Stage II Hydroelectric Plant	N28°59'50.15" E 107°46'50.89"
74	Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project	N 25°10'21" E 104°43'55"
75	Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project	N 25°07'45" E 104°41'56"
76	Wumaxi Stage I Hydroelectric Plant	N 29°40'18" E 102°32'30"
77	Mozigou Hydroelectric Plant	N 29°45'25.84" E 102°27'13.95"
78	Mayihe Hydroelectric Plant	N 29°42'58" E 102°33'12"
79	Jinyatan Hydroelectric Plant	N 29°40'4.94" E 102°43'29.55"
80	Toudaoshui Hydroelectric Station	N 29°42'41" E 102°33'31"
81	Sanhui Hydroelectric Plant	N 29°43'28"

		E 102°36'10"
82	Qingshuihe Stage I Hydroelectric Plant	N 29°36'21" E 102°45'43"
83	Gongjiagou Hydroelectric Plant	N 29°22'19.82" E 102° 2'25.10"
84	Chahe Stage III Hydroelectric Plant	N 29°48'09" E 102°28'46'
85	Daihuanggou Hydroelectric Plant	N 29°44'38.82" E 102°25'56.62"
86	Gaoqiaohe Hydroelectric Plant	N 29°36'13" E 102°44'4"
87	Zhuyeshan Hydroelectric Plant	N 29°02'22.71" E 103°01'36.51"
88	Lianghekou Hydroelectric Plant	N 29°09'46.2" E 103°05'35.7"
90	Dabaishu Hydroelectric Plant	N 24°23'23.15" E 100°08'42.08"
91	Dashi Stage III Hydroelectric Plant	N 24°21'11.25" E 100°06'25.21"
92	Dashi Stage II Hydroelectric Plant	N 24°24'11.31" E 100°08'55.01"
93	Yunnan Midu County Taishanhe Hydropower Station	N 24°56'24" E 100°42'20"
94	Zhenyuan County Xiaojiehe Hydropower Station	N 24°00'18" E 101°16'57"
95	Jinghong City Chuangye Hydropower Station	N 22°04'38" E 100°42'31"
96	Yingjiang Husa River 5th Stage Hydropower Plant	N 24°31'11" E 97°44'25"
97	Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station	N 22°55'31" E 103°4'31"
98	Fugong County Lishadi Hydropower Plant Project	N 27°16'20" E 98°53'50"

APPENDIX 4: INFORMATION OF MONITORING METERS FOR ALL INDIVIDUAL PROJECTS

Project No.	Project Title	Accuracy of the gateway meter	Position of the gateway meter	Substation
1	Zengfuyoujiang Hydroelectric Plant	1	On the main transformer in the hydropower plant	10kV-Xinmiao 35kv substation-Chongqing grid-grid,400V-10KV
2	Jianshitan Hydroelectric Plant	1	On the main transformer in the hydropower plant	10kV-Nanchuan Chengjiao 35kv Substation-Chongqing grid-grid,400V-10KV
3	Jinxing Hydroelectric Plant	0.2	Substation	10kV-Runxi 35kv substation-Pengshui grid-grid,400V-10KV
4	Huzhong Hydroelectric Plant	0.2	Substation	10kV-Shangtang 35kv substation-Pengshui grid-grid,6.3KV-35KV
5	Chongqing Wanzhou Fengmu Hydroelectric Plant	0.5s	On the transformer in substation	The electricity round voltage is 0.4kv, the voltage step-up into 10kV and then transmitted to Baitu 35kv substation, finally the electricity fed into CCPG via Chongqing power grid.
6	Chongqing Wanzhou Longdong Hydroelectric Plant	0.5s	On the transformer in substation	The electricity round voltage is 0.4kv, the voltage step-up into 10kV and then transmitted to Baitu 35kv substation, finally the electricity fed into CCPG via Chongqing power grid.

7	Chongqing Wanzhou Dengta Hydroelectric Plant	0.5s	On the transformer in substation	The electricity round voltage is 0.4kv, the voltage step-up into 10kV and then transmitted to Xinxiang 35kv substation, finally the electricity fed into CCPG via Chongqing power grid.
9	Chongqing Wanzhou Xiaolong Hydroelectric Plant	0.5s	On the transformer in substation	The electricity round voltage is 0.4kv, the voltage step-up into 10kV and then transmitted to Baitu 35kv substation, finally the electricity fed into CCPG via Chongqing power grid.
10	Chongqing Wanzhou Yihe Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	The electricity round voltage is 0.4kv, the voltage step-up into 10kV and then transmitted to Xiaopei 35kv substation, finally the electricity fed into CCPG via Chongqing power grid.
11	Chongqing Wanzhou Tiande Hydroelectric Plant	1.0	On the main transformer in the hydropower plant	The electricity round voltage is 0.4kv, the voltage step-up into 10kV and then transmitted to Xiaopei 35kv substation, finally the electricity fed into CCPG via Chongqing power grid.
12	Chongqing Wanzhou Puziling Hydroelectric Plant	0.5s	On the transformer in substation	The electricity round voltage is 0.4kv, the voltage step-up into 10kV and then transmitted to Longju 35kv substation, finally the electricity fed

				into CCPG via Chongqing power grid.
13	Chongqing Wanzhou Yanshan Hydroelectric Plant	0.5	On the transformer in substation	The electricity round voltage is 0.4kv, the voltage step-up into 10kV and then transmitted to Longju 35kv substation, finally the electricity fed into CCPG via Chongqing power grid.
15	Chongqing Wanzhou Wanlin Hydroelectric Plant	1	On the transformer in substation	The electricity round voltage is 0.4kv, the voltage step-up into 10kV and transmitted to Baitu 35kv substation then to the 35kv Fenshui substation, and finally the electricity fed into CCPG.
18	Chongqing Wanzhou Yanjingxi Hydroelectric Plant	0.5s	On the transformer in substation	The electricity round voltage is 0.4kv, the voltage step-up into 10kV and then transmitted to Baitu 35kv substation, finally the electricity fed into CCPG via Chongqing power grid.
21	Chongqing Wanzhou Xianfeng Hydroelectric Plant	0.5S	On the transformer in substation	6.3KV-main substation-35KV-Longju power station-local grid-grid
22	Heba Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Yangjiao substation-Wulong grid-grid,400V-10KV
23	Sandaoguai Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Yajiangdaqiao substation-Wulong grid-grid,380V-10KV

24	Beiya Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Yangjiao 35kv substation-Wulong grid-grid,400V-10KV
25	Wulong Guanqiao Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10kV-Xiannvshan substation-Wulong grid-grid,400V-10KV
27	Qingtongxi Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Baima 35kv substation-Wulong grid-grid,400V-10KV
28	Heping Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Yangjiao substation-Wulong grid-grid,400V-10KV
29	Guanziya Hydroelectric Plant	0.5	Booster station of Baiguo power station	10kV-Baiguo power station-Chengguan substation-Wulong grid-grid,400V-10KV
30	Baiyangping Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Zhongbaowan substation-Fuling grid-grid,400V-10KV
31	Chengmending Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Yangjiao substation-Wulong grid-grid,400V-10KV
32	Shuanglong Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10kV-Zhongbaowan substation-Fuling grid-grid,380V-10KV
33	Chushuitang Hydroelectric Plant	0.5	On the transformer in substation	10kV-Tongzi substation-Wulong grid-grid,400V-10KV

34	Shuangqiao Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10kV-Tongzi substation-Wulong grid-grid,400V-10KV
35	Shiqiao Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10kV-Jiangkou substation-Wulong grid-grid,400V-10KV
36	Shuanglian Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10kV-Tongzi substation-Wulong grid-grid,400V-10KV
37	Baijia Hydroelectric Plant	0.2S	Substation	10kV-MUZonghe stage 3 substation-Wulong grid-grid,400V-10KV
38	Xinqiao Hydroelectric Plant	0.5	Substation	10kV-Tongzi substation-Wulong grid-grid,400V-10KV
39	Luchi Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10kV-Zhongbaowan substation-Fuling grid-grid,400V-10KV)
40	Xiangyang Stage III Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Huolu 35kv substation-Wulong grid-grid,400V-10KV
41	Xiangyun Hydroelectric Plant	0.5	Telegraph pole outside of the Booster station	10kV-Yangjiao 35kv substation-Wulong grid-grid,400V-10KV
42	Hongshan Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Tongzi 35kv substation-Wulong grid-grid,400V-10KV

44	Yong'an Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10kV-Yangjiao 35kv substation-Wulong grid-grid,400V-10KV
45	Suokousi Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10kV-Tukan substation-Fuling grid-grid,400V-10KV
46	Xinli Hydroelectric Plant	0.2	Muzonghe Stage 4 hydropower plant main transformer	10kV-Muzonghe 110kv substation-Wulong grid-grid,400V-10KV
47	Caijiagou Stage III Hydroelectric Plant	0.5	Zhongli Power station Booster station	10kV-Zhongli substation-Fuling grid-grid,400V-10KV
48	Xiangyang Stage I Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10KV-Huolu35KV substation — Wulong grid –grid, 400V-10KV
49	Cheqingyan Hydroelectric Plant	0.2	Dongshan Heng 14# telegraph pole	10kV-Changba substation-Wulong grid-grid,400V-10KV
50	Lianghekou Hydroelectric Plant	0.2	Substation	10kV-Zhongbaowan substation-Fuling grid-grid, 400V-10KV
51	Wuhe Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Jiguang substation-Wulong grid-grid, 400V-10KV
52	Sihe Hydroelectric Plant	0.2	Switch station of Yancanghe stage 1 power station	10KV-switch station of Yancanghe stage 1-Tongzi 35KV substation-Wuling grid-grid,400V-10KV

53	Shilingyan Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10KV-Pingqiao substation — Fuling grid—grid, 400V-10KV.
54	Nanmu Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Tongzi substation-Wulong grid-grid,400V-10KV
55	Canglong Hydroelectric Plant	0.5S	On the main transformer in the hydropower plant	10kV- 35kV Huangyingxiang substation
56	Daheba Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10kV—Chenghuang 35kv substation —Wulong grid —grid , 400V-10KV)
57	Heixigou Hydroelectric Plant	0.2S	On the main transformer in the hydropower plant	6.3KV-Muzonghe stage 3-110KV-grid
58	Yanchanghe Stage III Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10kV-Tongzi substation — Wulong grid —grid, 400V-10KV
59	Muzonghe Stage IV Hydroelectric Plant	0.5s	On the main transformer in the hydropower plant	400v-10KV
60	Dengta Hydroelectric Plant	0.2	Substation	10KV-Zhongli power station-Tukan substation —Fuling grid-grid ,400V-10KV
61	Banqiao Stage II Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	10KV-Chenghuang substation 35KV — Wulong grid—grid, 400V-10KV

62	Shuangchahe Hydroelectric Plant	0.2	Substation	10kV-Zhongbaowan substation —Fuling grid— grid, 400V-10KV
63	Songshigou Hydroelectric Plant	0.5S	On the main transformer in the hydropower plant	0.4KV-booster station-10KV-Tukan power station-Chuandong grid - grid
65	Shujiahe Hydroelectric Plant	0.2	Substation	10kV-Chengguan substation-Wulong grid - grid; 6.3KV-10KV
66	Yangyan Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	6.3KV-Yajingdaqiao substation —Fuling grid— grid, voltage change from 6.3KV to 35KV
67	Baiguo Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	0.4KV-booster station of the power station and T connect to Wulong grid - grid
68	Longqiao Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	0.4KV-booster station-10KV-T connect to Xinmin stage 2 power station-grid
69	Baiyang Hydroelectric Plant	0.5S	On the main transformer in the hydropower plant	0.4KV-booster station-Chengguan substation-grid
70	Xinmin Tailwater Stage II Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10KV-Luolong substation —Fuling grid— grid and voltage chage from 400V to 10KV
71	Dongliuhe Hydroelectric Plant	0.2	On the main transformer in the hydropower plant	10KV-Huangying substation —Wulong grid —grid voltage change from 400V to10KV

72	Dahegou Hydroelectric Plant	0.5S	On the main transformer in the hydropower plant	Stage1, 10kv-Stage 2-Nanchuan grid Stage2, 10kV-Nanchuan grid-Chongqing grid
73	Xinmin Stage II Hydroelectric Plant	0.5S	Substation	35KV-Tukan substation—Fuling grid—grid, voltage change from 6.3KV into 35KV when pass Booster station
74	Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project	0.5S	On the transformer in substation	35KV-Wusha substation—city grid—southern grid, voltage is lowed down when pass Booster station
75	Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project	0.2S	On the transformer in substation	35KV-Wusha substation—city grid—southern grid, voltage is lowed down when pass Booster station
76	Wumaxi Stage I Hydroelectric Plant	2	On the main transformer in the hydropower plant	The power is transmitted to Ya'an grid via Sanhe substation through 10kv line finally to the grid, and the voltage changes from 10KV into 35KV when pass through the substation.
77	Mozigou Hydroelectric Plant	1	On the main transformer in the hydropower plant	The power is transmitted to Ya'an grid via Sanhe substation through 35kv line finally to the grid, and the voltage changes from 35KV into 110KV.
78	Mayihe Hydroelectric Plant	1	On the main transformer in	The power is transmitted to Ya'an grid via Xinmiao substation through 35kv

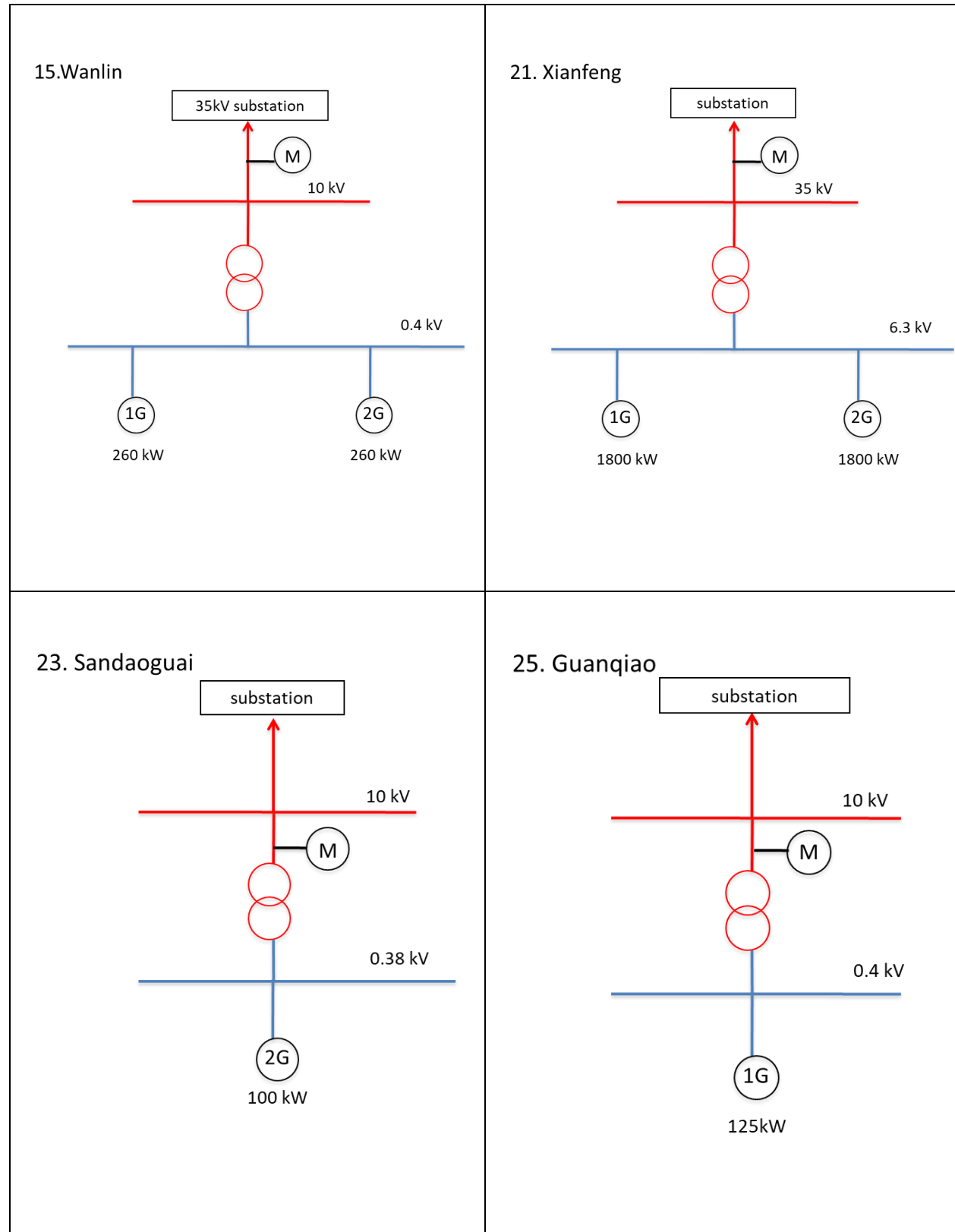
			the hydropower plant	line finally to the grid, and the voltage changes from 35KV into 110KV.
79	Jinyatan Hydroelectric Plant	2	On the main transformer in the hydropower plant	The power is transmitted to Ya'an grid via Xingfu substation through 35kv line finally to the grid, and the voltage changes from 35KV into 110KV.
80	Toudaoshui Hydroelectric Station	1	On the main transformer in the hydropower plant	The power is transmitted to Ya'an grid via Xinmiao substation through 35kv line finally to the grid, and the voltage changes from 35KV into 110KV.
81	Sanhui Hydroelectric Plant	Sanhui 1 Sanhuiwei 2	On the main transformer in the hydropower plant	The power is transmitted to Ya'an grid via Sanhe substation through 35kv line finally to the grid, and the voltage changes from 35KV into 110KV.
82	Qingshuihe Stage I Hydroelectric Plant	2	On the main transformer in the hydropower plant	The power is transmitted to Ya'an grid via Gangshang substation through 35kv line finally to the grid, and the voltage changes from 35KV into 110KV.
83	Gongjiagou Hydroelectric Plant	1	On the main transformer in the hydropower plant	The power is transmitted to Tangjiagou substation via 35kv line finally to the grid through the Tangli line of 110kv, and the voltage changes from 35KV into 110KV
84	Chahe Stage III Hydroelectric Plant	1	On the main transformer in	The power is transmitted to Ya'an grid via Sanhe

			the hydropower plant	substation through 35kv line finally to the grid, and the voltage changes from 35KV into 110KV
85	Daihuanggou Hydroelectric Plant	1	On the main transformer in the hydropower plant	The power is transmitted to Ya'an grid via Sanhe substation through 35kv line finally to the grid, and the voltage changes from 35KV into 110KV
86	Gaoqiaohe Hydroelectric Plant	0.5	On the main transformer in the hydropower plant	The power is transmitted to Ya'an grid via Gangshang substation through 35kv line finally to the grid, and the voltage changes from 35KV into 110KV.
87	Zhuyeshan Hydroelectric Plant	1	On the main transformer in the hydropower plant	110KV-Dabao substation –Chinese central grid
88	Lianghekou Hydroelectric Plant	0.5S	Switch Exit of line Yangcun35KV	The power is transmitted to Yangcun substation via Yang35KV and then through Hetaoping substation finally to the grid, and the voltage changes from 35KV into 110KV when pass the booster station
90	Dabaishu Hydroelectric Plant	0.5S	Switch Exit of line Shiyun35KV	The power is transmitted to Shiyun substation, finally to the grid, and the voltage changes from 35KV into 110KV when pass the booster station

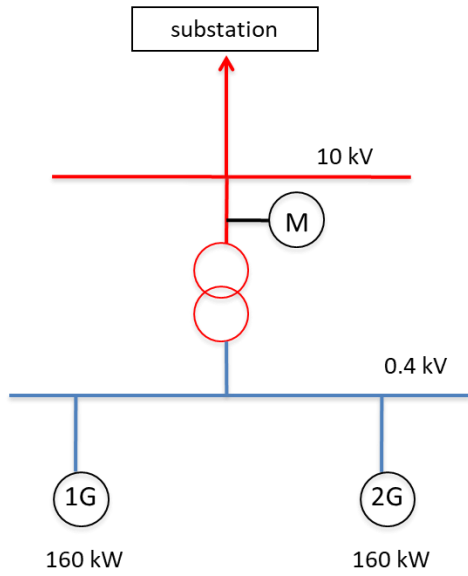
91	Dashi Stage III Hydroelectric Plant	0.2	Switch Exit of line Shiyun35KV	The power is transmitted to Shiyun substation, finally to the grid, and the voltage changes from 35KV into 110KV when pass the booster station
92	Dashi Stage II Hydroelectric Plant	0.2	Switch Exit of line Shiyun35KV	The power is transmitted to Shiyun substation, finally to the grid, and the voltage changes from 35KV into 110KV when pass the booster station
93	Yunnan Midu County Taishanhe Hydropower Station	0.2s	35kV Niujie Substation	The power is transformed from 6.3kV to 35kV on-site and then transmitted from Taishanhe power station through 3.1km transmission line to Niujie Substation in Midu County then to China Southern Power Grid.
94	Zhenyuan County Xiaojiehe Hydropower Station	0.5	35kv Zhedong Substation	The power is transmitted from Xiaojiehe power station through 35kv Zhedong Substation via Pu'er substaion, finally to China Southern Power Grid, and the voltage changes from 6.3 kv to 35 kv when pass the Zhedong substation
95	Jinghong City Chuangye Hydropower Station	0.5S	on-site, at the point after power has been transformed to 35kV voltage.	The power is transformed from 6.3kV to 35kV on-site and then transmitted from Chuangye power station through 14km transmission line to Chengxi Substation in Jinghong City then to

				China Southern Power Grid.
96	Yingjiang Husa River 5th Stage Hydropower Plant	0.5S	On high voltage side of main transformer in substation	The power is transmitted to Husa River stage 4 substation via Yang35KV and finally to the Hongzhou grid, and the voltage changes from 35KV into 110KV when pass the booster station
97	Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station	0.2	On high voltage side of main transformer in substation	The power is transmitted from Datan Power Station T-connected to a 110kv line which is from Mengqiao Power station and Lvshui Power Station via 2km 110KV line, finally to the grid
98	Fugong County Lishadi Hydropower Plant Project	0.2S	On high voltage side of main transformer in substation	The power is transmitted to Aluodi Switch station via Lia line 110KV and finally to the Lanfu line via 220KV

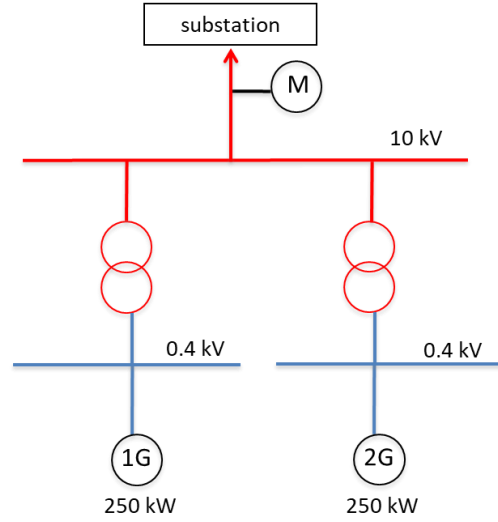
APPENDIX 5: MONITORING FLOW DIAGRAMS FOR SAMPLING PROJECTS



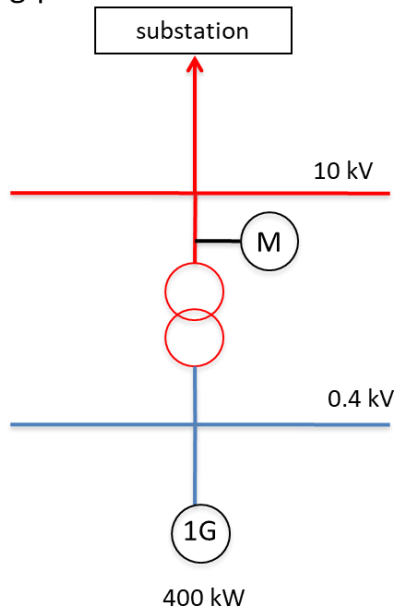
31. Chengmendong



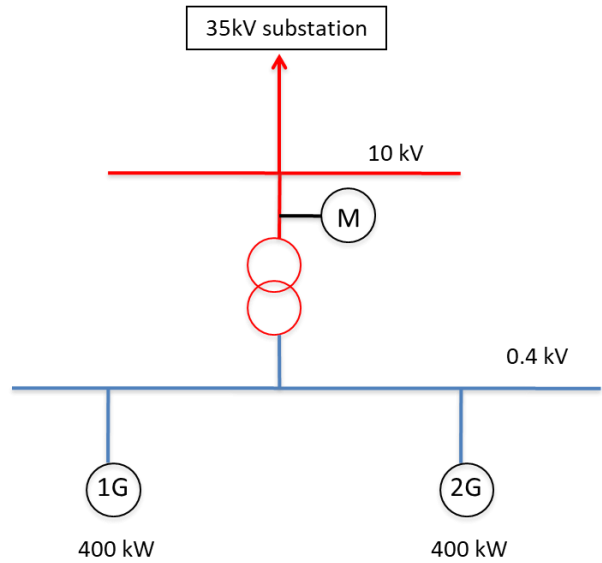
33. Chushuitang



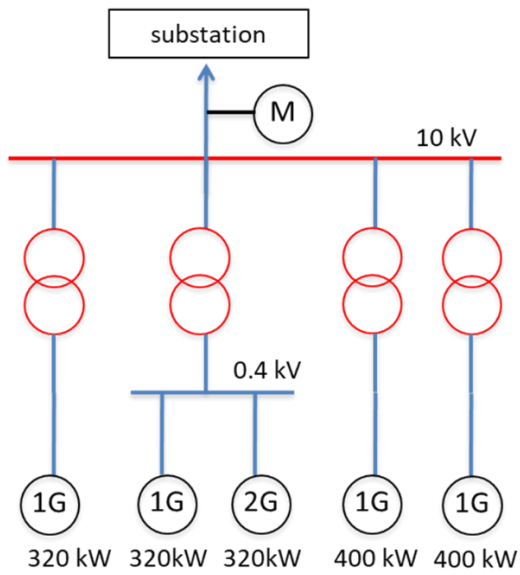
34. Shuangqiao



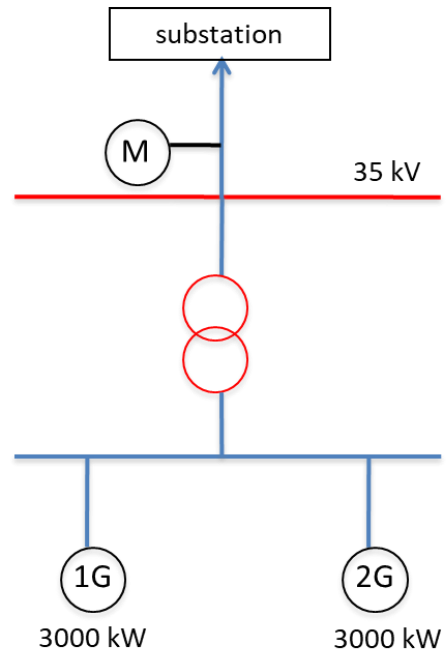
52. Sihe



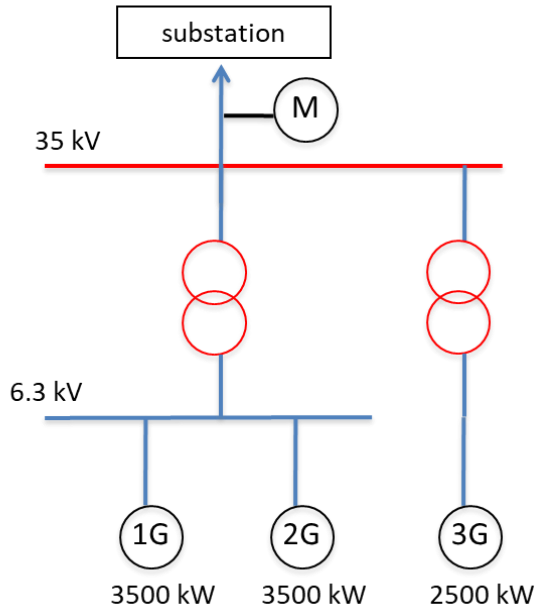
71. Dongliuhe



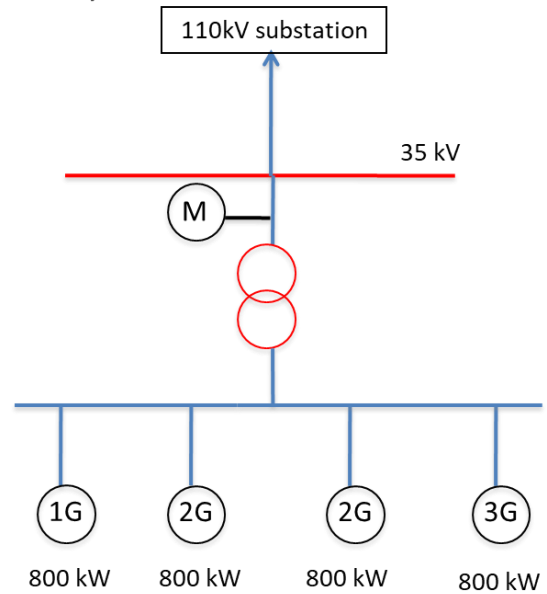
74. Puti I



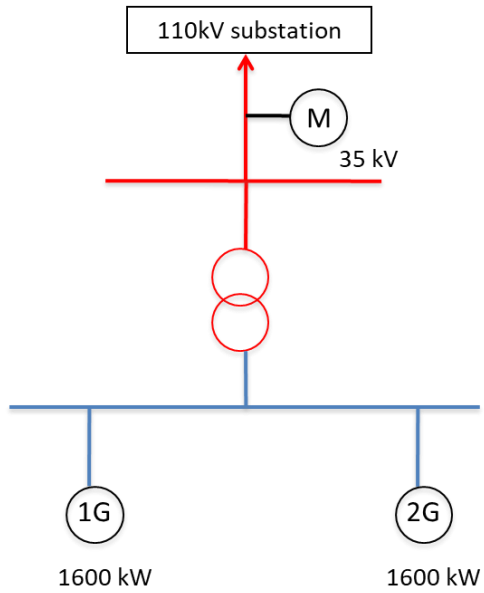
75. Puti II



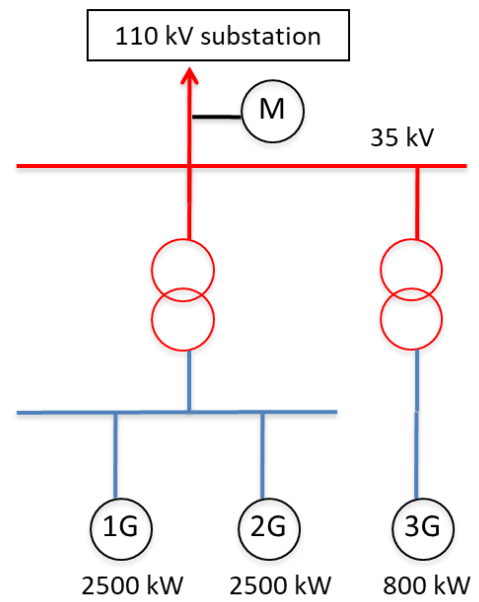
79. Jinyatan



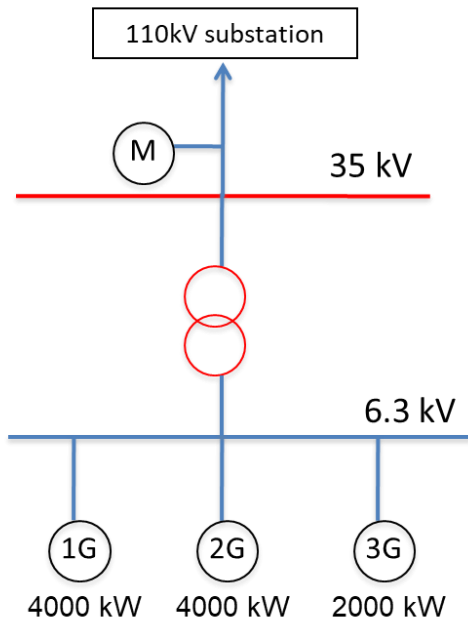
80. Toudaoshui



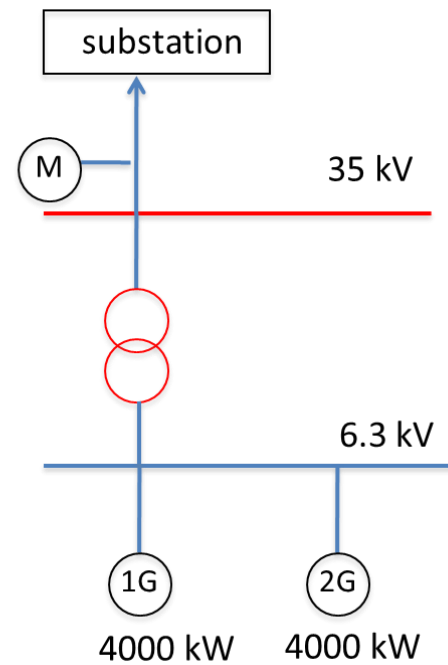
84. Chahe Stage III



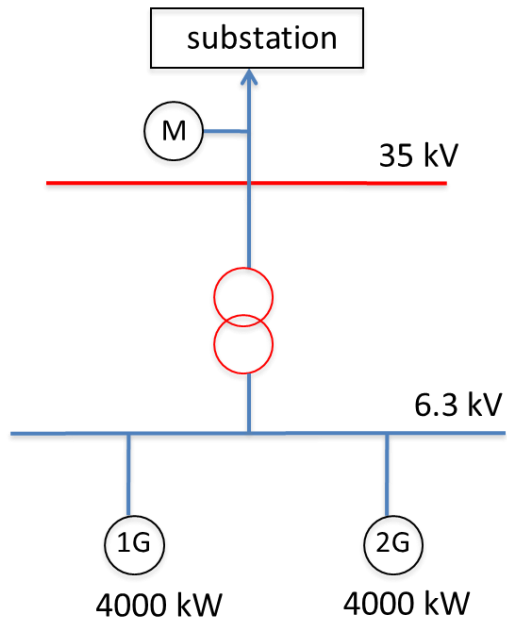
88. Lianghekou



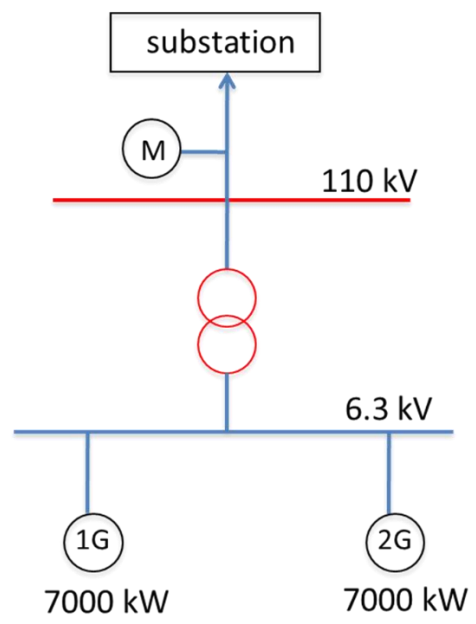
95. Chuangye



96. Husa River



98. Lishadi



APPENDIX 6: TECHNICAL SPECIFICATIONS OF MAIN EQUIPMENT INSTALLED AT EACH PROJECT

Project No.	Project Title	Total Installed capacity (MW)	Turbine							Generator									
			Number	Model	Rated Water Head (m)	Rated flow rate (m3/s)	Rated power (MW)	Rated rotational speed (r/min)	Manufacturer	Number	Model	Rated Power(MW)	Rated Electrical Current (A)	Rated voltage (KV)	Rated rotational speed (r/min)	Rated frequency	Rated Power Factor	Manufacturer	
1	Zengfuyoujiang Hydroelectric Plant	0.5	2	ZD-560-80	14	2.4	0.25	600 750	Sichuan Jintang Hydraulic Turbine Ltd.	2	SFL-250-10/750	0.25	370	0.4	600	50	0.8	Chongqing Electrical Machinery Plant	
				ZD-560-80	14	2.4	0.25	600 750			SFL-250-10/750	0.25	370	0.4	600	50	0.8		
2	Jianshitan Hydroelectric Plant	0.7	6	ZD-760-80	6	2.5	0.1	750	Sichuan Jintang Hydraulic Turbine Ltd.	6	SFL-100-8/650	0.1	185	0.4	750	50	0.8	Chongqing Electrical Machinery Plant	
				ZD-760-80	6	2.5	0.1	750			SFL-100-8/651	0.1	185	0.4	750	50	0.8		
				ZD-760-80	6	2.5	0.1	750			SFL-100-8/652	0.1	185	0.4	750	50	0.8		
				ZD-760-80	6	2.5	0.125	750			SFL-100-8/653	0.1	185	0.4	750	50	0.8		
				ZD-760-120	6	5.5	0.25	300	Sichuan Dayi Hydraulic Turbine Ltd.		SFL-150-20/750	0.15	370	0.4	300	50	0.8		
				ZD-760-120	6	5.5	0.25	300			SFL-150-20/750	0.15	370	0.4	300	50	0.8		
3	Jinxing Hydroelectric Plant	0.83	1	HLA153-WJ-60	39.5	3	0.83	750	Chongqing Zhong county Yinhe Hydraulic Turbine Plant	1	SFWE-830	0.83	860	0.4	750	50	0.8		Chongqing Sailimeng Electric Machine Co., Ltd
4	Huzhong Hydroelectric Plant	2.5	2	CJA237-W-110/B1×11	280	0.56	1.307	600	Chongqing Power Equipment Manufacturing Ltd.	2	SFW1250-10/1430	1.25	143					Hunan Shanli hydro Equipment Manufacturing Ltd.	
5	Chongqing Wanzhou Fengmu Hydroelectric Plant	0.1	1	HLA194-WJ-35	18-36	0.387 - 0.518	0.161	848-1200	Chongqin Sanxia electrical equipment Ltd	1	SFW100-8/590	0.1	180.5	0.4	1000	50	0.8	Sichuan Xinsheng electrical equipment factory	

6	Chongqing Wanzhou Longdong Hydroelectric Plant	0.2	1	CJ22-W-55/1x7	100-200	0.104 - 0.243	0.132 - 0.426	750-1000	Chongqing wanzhou Wujiao Turbine factory	1	SFW-W200-8/740	0.2	361	0.4	750	50	0.8	Sichuan Xinsheng electrical equipment factory
7	Chongqing Wanzhou Dengta Hydroelectric Plant	0.25	1	HL820-WJ-60	16.5	2.06	0.25	600	Chongqing wanzhou Wujiao Turbine factory	1	SFW250-10/850	0.25	451	0.4	600	50	0.8	Chongqing wanzhou Wujiao Turbine factory
9	Chongqing Wanzhou Xiaolong Hydroelectric Plant	0.32	1	CJ237-WJ-70/1x5.5	300	0.15-0.2	0.379	1000	Chongqing Electricity Generation Equipment Manufacturing Ltd	1	SFW-W-320-6/740	0.32	577	0.4	1000	50	0.8	Chongqings ailimeng electricity factory
10	Chongqing Wanzhou Yihe Hydroelectric Plant	0.32	1	CJ22-W-55/1x7	220.3	0.2	0.4253	1000	Chongqing Electricity Generation Equipment Manufacturing Ltd	1	SFW320-6/740	0.32	577	0.4	1000	50	0.8	Chongqing electrical factory
11	Chongqing Wanzhou Tiande Hydroelectric Plant	0.35	2	HL160-WJ-42	244-62.2	0.566 - 0.903	0.111 — 0.435	807—1286	Sichuan Zhongzhou turbine factory	2	TSW11-8	0.175	181	0.4	750	50	0.8	Chongqing Yunhe entity Ltd
12	Chongqing Wanzhou Puziling Hydroelectric Plant	0.48	2	HZ240-W-50	15.0 — 36.5	1.201 — 1.870	0.144 — 0.5464	600—1000	Zhong County Boxuan Turbine factory	2	TSWN85/61-8	0.32	452	0.4	750	50	0.8	Chongqing Sailimeng Electricity Factory
				HL820-WJ-65	19	2.16	0.32	488-827			SFWE160-8/650	0.16	289	0.4	750	50	0.8	
13	Chongqing Wanzhou Yanshan Hydroelectric Plant	0.5	4	CJ22-W-55/1x7	238.43	0.3	0.4253	1000	Chongqing Three Gorge hydro electrical equipmet Manufacture Ltd	2	SFW250-6/740	0.25	451	0.4	1000	50	0.8	Chongqing Three Gorge hydro electrical equipment Manufacture Ltd
15	Chongqing Wanzhou Wanlin Hydroelectric Plant	0.52	2	HLA550-WJ-50	55.6	0.8	0.32	1000	Chongqing Zhongzhou Turbine factory	2	SFW-W260-6/650	0.26	361	0.4	1000	50	0.8	Chongqing Sailimeng electrical equipment Ltd.
18	Chongqing Wanzhou Yanjingxi Hydroelectric Plant	0.6	2	HL820-WJ-50	20	1.35	0.2	654-822	Zhong county Boxuan Turbine factory	1	SFW200-8/740	0.2	361	0.4	750	50	0.8	Chongqin Salimeng Electrical Equipment Ltd

				HL820-WJ-65	19	2.16	0.32	488-827	Zhong county Boxuan Turbine Factory	1	SFW400-10/99	0.4	722	0.4	600	50	0.8	Chongqin Salimeng Electrical Equipment Ltd
21	Chongqing Wanzhou Xianfeng Hydroelectric Plant	2×1.8	2	HLA542-WJ-60	197	1.06	1.895	1500	Chongqing Zhongzhou Turbine factory	2	SFW-J1800-4/1480	1.8	206.2	6.3	1000	50		Chongqing Yun River Hydroelectric Equipment Ltd
22	Heba Hydroelectric Plant	0.32	2	HL110—WJ--42	40	1.5	0.16	1000	Chongqing Electrical Machinery Plant	2	SFW160—6/590	0.16	289	0.4	1000	50	0.8	Chongqing Gongzhou Hydraulic Turbine Ltd.
23	Sandaoguai Hydroelectric Plant	0.1	1	HZA-W-40	53	0.26	0.1	800	Chongqing Zhong County Hydraulic Turbine Plant	1	SFW-W-8/590	0.1	180.5	0.38	750	50	0.8	Sichuan Xinsheng Electrical Machinery Plant
24	Beiya Hydroelectric Plant	0.125	2	HL194-WJ-35	34	0.46	0.25	1000	Chongqing Wanzhou Electrical Machinery Plant	1	SFW125-6/650	0.125	190	0.4	1000	50	80	Chongqing Electrical Machinery Plant
25	Wulong Guanqiao Hydroelectric Plant	0.125	1	HL194—WJ—35	40	0.35	0.125	1000	Chongqing Hydraulic Turbine Plant	1	TYPEFW—125-6/560	0.125	125	0.38	1000	50	0.8	Chongqing Electrical Machinery Plant
27	Qingtongxi Hydroelectric Plant	0.2	1	FL110—Wy—50	48	0.5	0.21	750	Chongqing Electrical Machinery Plant	1	TYTESFW—W200	0.2	CURRENT36.1	0.4	750	50	0.8	Chongqing Electrical Machinery Plant
28	Heping Hydroelectric Plant	0.25	1	XJA—W—40/1×11	108	0.33	0.25	1000	Sichuan Hydraulic Turbine Plant	1	SFW—W250-6/740	0.25	451	0.4	1000	50	0.8	Chongqing Shilijian Electrical Machinery Plant
29	Guanziya Hydroelectric Plant	0.32	1	XJA—W—40/1×10	18	2.1	0.32	600	Chongqing Electrical Machinery Plant	1	SFW—W320-10/850	0.32	577	0.4	600	50	0.8	Chongqing Electrical Machinery Plant
30	Baiyangping Hydroelectric Plant	0.32	1	XLA-W1*1.25	75-150	0.487-0.689	294-851	750-1000	Chongqing Power Equipment Manufacturing Ltd	1	SFW-320-850	0.32	577	0.4	750	50	0.8	Chongqing Sailimeng Electric Machine Co., Ltd

31	Chengmending Hydroelectric Plant	0.32	2	HL110—WJ--42	40	1.5	0.96	1000	Chongqing Electrical Machinery Plant	2	SFW160—6/590	0.16	289	0.4	1000	50	0.8	ChongqingZ hongzhou Hydraulic Turbine Plant
32	Shuanglong Hydroelectric Plant	0.35	2	WL160-42	42	1.2	0.1	700	Chongqing Wanzhou Hydraulic Turbine Plant	2	SFW-W250-61/740	0.25	450	0.4	700	50	0.8	ChongqingE lectrical Machinery Plant
				HLD54-WJ-60	42	1.25	0.25	700			SFW100-6/560	0.1	450	0.4	700	50	0.8	
33	Chushuitang Hydroelectric Plant	0.375	2	HLA551-WJ-50	24	1.85	0.25	1000	Sichuan Zhong County Hydraulic Turbine Plant	2	SFW-250-8/740	0.25	451	0.4	750	50	0.8	Chongqing Sailimeng Electric Machine Co., Ltd
				HL260-WJ-35	24	0.8	0.125	944			SFW-125-12/740	0.125	451	0.4	1000	50	0.8	
34	Shuangqiao Hydroelectric Plant	0.4	1	CJ237—W—Y	256	0.2	0.4	1000	Chengdu Jintang Couunty Jinyuan Hydraulic Machine Manufacfacturi ng Ltd.	1	SFW-400-6/850	0.4	721.7	0.4	1000	50	0.8	Sichuan XinshengEl ectrical Machinery Plant
35	Shiqiao Hydroelectric Plant	0.4	1	XJA—W—50/1×12.5	120	0.47	0.459	750	Sichuan Jianhua Hydraulic Turbine Plant	1	SFW—W400-8/850	0.4	721.7	0.4	750	50	0.8	Sichuan Xinsheng Electrical Machinery Plant
36	Shuanglian Hydroelectric Plant	0.4	1	HL110-WJ-50	90	0.55	0.44	1000	Chongqing Power Equipment Manufacturing Ltd	1	SFW400-6/850	0.4	721.73	0.4	1000	50	0.8	Sichuan Xinsheng Electrical Machinery Plant
37	Baijia Hydroelectric Plant	0.4	1	HL200-WJ-35	76	0.76	0.4	1000	Chongqing Power Equipment Manufacturing Ltd	1	SFW-W-W400-6/850	0.4		0.4	1000	50	0.8	Chongqing Power Equipment Manufacturi ng Ltd
38	Xinqiao Hydroelectric Plant	0.4	1	XJA—W50/1×12.5	102	0.5	0.4	1000	Chongqing Power Equipment Manufacturing Ltd	1	SFW400—6/850	0.4		0.4	1000	50	0.8	Chongqing Power Equipment Manufacturi ng Ltd
39	Luchi Hydroelectric Plant	0.445	2	SJXJA-W-32/1×9	80	1	0.32	750	Chongqing Zhong County Hydraulic Turbine Plant	2	JXBESEE-W-320—885	0.32		0.4	750	50	0.8	Chongqing Power Equipment Manufacturi ng Ltd
				SJXJA-W-50/1×125	80	1	0.125	750			JXBESEE-W-125—656	0.125		0.4	750	50	0.8	

40	Xiangyang Stage III Hydroelectric Plant	0.5	2	CJ22-W-70/1×7	235	0.42	0.25	1000	Chongqing Wanzhou Electrical Machinery Plant	2	SFW250/89	0.25	400	0.4	1000	50	0.8	Chongqing Electrical Machinery Plant
41	Xiangyun Hydroelectric Plant	0.5	2	CJA237-W-40/1×11	105	0.65	0.25	1000	Chongqing Zhong County Sanxia Hydraulic Equipment Manufacturing Ltd.	2	SFW-W250-6/740	0.25	451	0.4	1000	50	0.8	Chongqing Sailimeng Electric Machine Co., Ltd
42	Hongshan Hydroelectric Plant	0.5	2	CD237-Y-1X7/55	260	0.125	0.274	1000	Chongqing Power Equipment Manufacturing Ltd.	2	VFW-V250-6/740	0.25	451	0.4	1000	50	0.8	Chengdu Xinsheng Electrical Machinery Plant
44	Yong'an Hydroelectric Plant	0.63	1	CJ237-W-70/1×7	330	0.24	0.63	1000	Chongqing Wanzhou Electrical Machinery Plant	1	SFW-W630-6/990	0.63	1136.7	0.4	1000	50	0.8	Chongqing Xinsheng Electrical Machinery Plant
45	Suokousi Hydroelectric Plant	0.65	2	110W—42	69	0.524	0.25	1000	Chongqing Power Equipment Manufacturing Ltd	2	50—6/140	0.25	451	0.4	1000	50	0.8	Chongqing Xinsheng Electrical Machinery Plant
				110W-50	69	0.524	0.4	1000			400-6/850	0.4	121.7	0.4	1000	50	0.8	
46	Xinli Hydroelectric Plant	0.7	2	HL240-WJ-60	295	3.33	0.5	750	Wanzhou Hydraulic Turbine Plant	2	SFW500-10/990	0.5	400	0.4	750		0.8	Chongqing Xinsheng Electrical Machinery Plant
				HL260-WJ-42	295	3.33	0.2	750			SFW200-6/740	0.2		0.4	750		0.8	Chongqing Xinsheng Electrical Machinery Plant
47	Caijiagou Stage III Hydroelectric Plant	0.72	2	XGA-W-1X15.5	85	0.617	0.427	600	Chongqing Power Equipment Manufacturing Ltd	2	SFW-400-10/990	0.4	721.7	0.4	600	50	0.8	Chengdu Xinsheng Electrical Machinery Plant
				XGA-W-1X14	85	0.488	0.338	750			SFW-W320-8/850	0.32	571.4	400	750		0.8	
48	Xiangyang Stage I Hydroelectric Plant	0.8	2	CJ22-W-70/1×7	225	0.42	0.4	1000	Chongqing Wanzhou Power Equipment Manufacturing Ltd.	2	SFW400/69	0.4	650	0.4	1000	50	0.8	Chongqing Wanzhou Power Equipment Manufacturing Ltd.
49	Cheqingyan Hydroelectric Plant	0.8	2	CJ22—W—70/1×9	185	0.25	0.4	750	Chongqing Hydraulic Turbine Plant	2	SFW—W400-8/850	0.4	722	0.4	750	50	0.8	Chongqing Electrical Machinery Plant

50	Lianghekou Hydroelectric Plant	0.8	2	HLD260—50	29	1.8	0.4147	750	Chongqing Power Equipment Manufacturing Ltd.	2	SFW—400-8/850	0.4	721.7		750	50	0.8	Chongqing Electrical Machinery Plant
51	Wuhe Hydroelectric Plant	0.8	2	CJ22—W—70/1×9	230	0.25	0.4	750	Chongqing Wanzhou Hydraulic Turbine Plant	2	SFW—W400-8/850	0.4	722	0.4	750	50	0.8	Chongqing Power Equipment Manufacturing Ltd.
				CJ22—W—70/1×9	230	0.25	0.4	750			SFW—W400-8/850	0.4	722	0.4	750	50	0.8	
52	Sihe Hydroelectric Plant	0.8	2	CJ22—W—70/1×9	200	0.3825	0.6116	750	Chongqing Power Equipment Manufacturing Ltd.	2	SFW—W400—8/850	0.4	620	0.4	750	50	0.85	Sichuan Xinsheng Electrical Machinery Plant
53	Shilingyan Hydroelectric Plant	0.82	2	HL110-WJ-50	81	0.4	0.5	1095	Sichuan Hydraulic Turbine Plant	2	SFW-500-6/850	0.5		0.4	1000	50	0.8	Chongqing Electrical Machinery Plant
				XJA-W-40/1×11	81	0.4	0.32	1095			SFW-320-6/41	0.32		0.4	1000	50	0.8	
54	Nanmu Hydroelectric Plant	0.82	2	CD22—W—70/1×9	180	0.2727	0.5	767	Chongqing Power Equipment Manufacturing Ltd.	2	SFW—W500-8/990	0.5	902	0.4	1500	50	0.8	Chongqing Sailimeng electrical equipment Ltd.
				CD22—W—10/1×7.8	180	0.2727	0.32	767			SFW—W320-8/850	0.32	577	0.4	750	50	0.8	
55	Canglong Hydroelectric Plant	0.88	2	SFW-W630-6/990 HLA-WJ-50	69	1.4	0.688	1050	Chongqing Power Equipment Manufacturing Ltd	2	SFW—W630-6/990	0.63	1136.7	0.4	2000	50	0.8	SichuanXinsheng Electrical Machinery Plant
				SFW-W250-6/740 HL110-WJ-42	75	0.382	0.222	1000			SFW—W250-6/740	0.25	451	0.4	2400	50	0.8	
56	Daheba Hydroelectric Plant	1	2	CJA23-W—90/1×4	610	0.11	0.5	1000	Chongqing Power Equipment Manufacturing Ltd/SichuanHydraulic Turbine Plant	2	SFW—W500-6/850	0.5	902.1	0.4	1000	50	0.8	SichuanXinsheng Electrical Machinery Plant
57	Heixigou Hydroelectric Plant	1	1	CJA237-W-115/1×13	175	0.72	1	500	Ling Ling Generating Equipment Co., Ltd. P. R. China	1	SFW1000-12/1430	1	115	6.3	500	50	0.8	Ling Ling Generating Equipment

																		Co., Ltd. P. R. China
58	Yanchanghe Stage III Hydroelectric Plant	1.02	3	HL5510-WJ-50	36.5	3.78	0.5	1000	Chongqing Power Equipment Manufacturing Ltd	3	SEW-W500-6/850	0.5	903	0.4	1000	50	0.8	Chongqing Power Equipment Manufacturing Ltd
				HL240-WJ-42	36.5	3.78	0.32	1000			SFW-W320-6/740	0.32	577.4	0.4	1000	50	0.8	
				HL240-WJ-35	36.5	3.78	0.2	1000			SFW-W200-6/740	0.2	361	0.4	1000	50	0.8	
59	Muzonghe Stage IV Hydroelectric Plant	3×0.36	3	HCD46-WJ-84	116	2.942	0.393	500	Chongqing Generating Equipment Manufacture Co., Ltd.	3	SFW360-14/180	0.36		0.4	500	50	0.8	
60	Dengta Hydroelectric Plant	1.09	4	CG237W55-1*5.5	170-296	0.13-0.172	183-396	1000	Sichuan Emeishan Longjian Hydraulic Machine Manufacturing Ltd.		SFW-W320-6/740	0.32	577.4A	0.4	1000	50	0.8	Sichuan Xinsheng Electrical Machinery Plant
				CG237W55-1*5.5	290	0.166	401	1000			SFW-W320-6/740	0.32	577.4A	0.4	1000	50	0.8	
				CG237-W55/1*5	290	0.142	343	1000			SFW-W250-7/40	0.25	361A	0.4	1000	50	0.8	
				CG237-W55/1*4.5	170-290	0.088-0.115	120-260	1000			SFW-W200-7/40	0.2	361A	0.4	1000	50	0.8	
61	Banqiao Stage II Hydroelectric Plant	1.4	3	HLD54-WJ-60	85	0.77	0.5	1000	Chongqing Power Equipment Manufacturing Ltd	3	SFW-W500-6/850	0.5	903	0.4	1000	50	0.8	Chongqing Sailimeng Electric Machine Co., Ltd
				HLD54-WJ-60	85	0.77	0.5	1000	Sichuan Emeishan Longjian Hydraulic Machine Manufacturing Ltd.		SFW-W500-6/850	0.5	903	0.4	1000	50	0.8	Chongqing Electrical Machinery Plant
				HL160-WJ-55	85	0.77	0.4	1000			SFW-W400-6/850	0.4	721.7	0.4	1000	50	0.8	Sichuan Xinsheng Electrical Machinery Plant
62	Shuangchahe Hydroelectric Plant	1.43	2	CJA237—W--90/1×5.5	630	0.1631	0.857	1000	Chongqing Power Equipment Manufacturing Ltd	2	SFW—800-6/990	0.8	1443	0.4	1000	50	0.8	Guangdong Chaozhou Huineng Electric Equipment Ltd.
				CJA237—W--90/1×5	630	0.1631	0.685	1000			SFW—630-6/990	0.63	1370	0.4	1000	50	0.8	
63	Songshigou Hydroelectric Plant	3×0.5	3	GJ22-W-70/1X9	100-250	0.27-0.428	0.216-0.849	600-750	Emei Mountain City Longjian Hydropower	3	SFW—W500-8/990	0.5	902.1	0.4	750	50	0.8	Sichuan Xinsheng Electrical

									Equipment Manufacture Co., Ltd.									Machinery Plant
65	Shujiahe Hydroelectric Plant	2.5	2	HLD54—WJ—71	153	1.3	1.5	1000	Chongqing Power Equipment Manufacturing Ltd	2	SFWE—K1250-6/1430	1.25	85.9	10.5	1000	50	0.8	Chongqing Electrical Machinery Plant
66	Yangyan Hydroelectric Plant	2.5	2	ZDT03-LH-225	39	12.6	1	279	Chongqing Power Equipment Manufacturing Ltd	2	SF1000-32/2600	1	114.6	6.3	187.5	50	0.8	Guangdong Xingning County Electrical Machinery Co.,Ltd.
			2	IG103-6H-225	39	12.6	0.25	192	Sichuan Dayi County Hydraulic Turbine Plant	2	SF250-32/250	0.25	41	450	187	50	0.8	
67	Baiguo Hydroelectric Plant	2×1.6	2	CJA237-W-110/2×11 B	192	1.05	1.6	500	Dongfeng Electric Machinery Plant P. R. China	2	SFW1600-12/1730		183.3	6.3		50	0.8	Dongfeng Electric Machinery Plant P. R. China
68	Longqiao Hydroelectric Plant	2×2	2	HLD54-WJ-78	159	1.82	2.11	10000	Lingling Power Equipment Plant	2	SFW2000-6/1430	2	230	6.3	1000	50	0.8	Lingling Power Equipment Plant
69	Baiyang Hydroelectric Plant	2×2.5	2	CJA237-W-100/1×11	435	0.72	2.5	750	Sichuan Dongfeng Electric Machinery Plant Co., Ltd. P. R. China	2	SFW2500-8/17300	2.5	286.4	6.3		50	0.8	Sichuan Dongfeng Electric Machinery Plant Co., Ltd. P. R. China
70	Xinmin Tailwater Stage II Hydroelectric Plant	1.26	2	HLA153-WJ-500	46.5	1.8	0.63	1000	Zhongzhou Hydraulic Turbine Plant	2	SFW—W630—6/990	0.63	1136.7	0.4	1000	50	0.8	Chengdu Xinmin Electrical Machinery Plant
71	Dongliuhe Hydroelectric Plant	1.86	1	HL110--50	64	0.6	0.32	1000	Wanzhou Hydraulic Turbine Plant	1	SFW320—6/850	0.32	577.4	0.4	1000	50	0.8	Sichuan Xinsheng Electrical Machinery Plant
			2	XJA-W-50/1×9	145	0.5	0.64	1000	Wanzhou Hydraulic Turbine Plant	2	SFW320—6/740	0.32		0.4	1000	50	0.8	Sichuan Xinsheng Electrical Machinery Plant

			1	HL110-50	85	0.5	0.4	1000	Wanzhou Hydraulic Turbine Plant	1	SFW400-6/850	0.4		0.4	1000	50	0.8	Sichuan Xinsheng Electrical Machinery Plant
			1	XJA-W-50/1×12.5	125	0.5	0.5	1000	Wanzhou Hydraulic Turbine Plant	1	SFW500—8/990	0.5		0.4	750	50	0.8	Sichuan Xinsheng Electrical Machinery Plant
7 2	Dahegou Hydroelectric Plant	5×0.63	5	CJ237-9/1×5 (2) CJ237-9/1×6(3)	503	0.165	0.63	1000	Emei Mountain City Juneng Hydropower Equipment Manufacture Co., Ltd.	5	SFW630-6/990	0.63	1137	0.4	1000	50	0.8	Chongqing Electric Machine Federation Ltd. PRC.
7 3	Xinmin Stage II Hydroelectric Plant	5.5	3	HLD54-WJ-78(2)	150	5	2	1000	Hunan Yongzhou Lingling Hydraulic Turbine Plant	3	SFW—2000—6/1430(2)	2	230	6.3	1000	50	0.8	Hunan Yongzhou Lingling Hydraulic Turbine Plant
				HLD54-WJ-75(1)	150	5	1.5	1000	Chongqing Wanzhou Hydraulic Turbine Plant		TYPEWEK150 0-6/1431(1)	1.5	230	6.3	1000	50	0.8	Chongqing Wanzhou Hydraulic Turbine Plant
7 4	Guizhou Province Xingyi City Puti Hydropower Plant Technical Reform Project	6	2	H4045-LJ-160	22.4	17.3	3	250	Sichuan Dongfeng Electrical Equipment Factory	2	sf3000-24/3250	3	343.7	6.3	250	50	0.8	Sichuan Dongfeng Electrical Equipment Factory
7 5	Guizhou Province Xingyi City Puti 2nd Stage (Xiniutang) Hydropower Plant Technical Reform Project	9.5	2	HLUF391 3-LJ-160	24.5	17.42	3.684	250	Naning Electrical Equipment Factory of P.R.China	2	SF3500_24/32 50	3.5	401	6.3	250	50	0.8	Naning Electrical Equipment Factory of P.R.China
			1	HLA551-LJ-140	24.5	11.84	2.63	300		1	SF2500-20/2800	2.5	236.38	6.3	300	50	0.8	
7 6	Wumaxi Stage I Hydroelectric Plant	0.8	2	cJ22-w-70/1×9	190	0.3	0.4	750	Sichuan Hongya Turbine Ltd.	2	SFW-W400-8/850	0.4	721.7	0.4	750	50	0.8	Sichuan Xinsheng Electric Machine Ltd.
7 7	Mozigou Hydroelectric Plant	1.26	2	CJ475-W-85/1*8	256	0.62	0.63	750	Sichuan Hongya Turbine Ltd.	2	SFW-W630-8/990	0.63	1137	0.4	750	50	0.8	Chongqing Electric Machine Federation Ltd.PRC

78	Mayihe Hydroelectric Plant	1.26	2	DL54—WJ—60	115	0.4-1	150-630	750-1000	Sichuan Jiannan Electricity Machine Ltd.	2	SFW-W630-6/990	0.63	1137	0.4	1000	50	0.8	Chongqing Electric Machine Federation Ltd.PRC
79	Jinyatan Hydroelectric Plant	3.2	4	CJ22-W70/1×9 B	280	0.4	0.8	1000	Zhongzhou Turbine Ltd.	4	SFW-W800-6/990	0.8	1442	0.4	1000	50	0.8	Chongqing Electric Machine Federation Ltd.PRC
80	Toudaoshui Hydroelectric Station	3.2	2	XJE-W-60B/2×11.5	160—215	1.118—1.296	1.485—2.338	843—978	Zhejiang Leqing Machine Ltd.	2	SFW1600-6/1430	1.6	183.3	6.3	1000	50	0.8	Zhejiang Linhai Electric Machine Ltd.
81	Sanhui Hydroelectric Plant	4.8	3+3	Sanhui: HL550-WJ-60; Sanhuiwei i HLD46-WJ-55	Sanhui: 81; Sanhuiwei: 71	Sanhui: 1.26; Sanhuiwei: 1.5	0.8	1000	Yibin Fuyuan Electricity generation Equipment Ltd.	3+3	SFW-W800-6/990	0.8	1442	0.4	1000	50	0.8	Chongqing Electric Machine Federation Ltd.PRC
82	Qingshuihe Stage I Hydroelectric Plant	5	2	CJA237—W—110/2×10.2	268	1.12	2.5	600	Lisong Hydraulic-electricity Technology Co.Ltd. Chongqing	2	SFW2500-8/2160	2.5	343	10.5	750	50	0.8	Chongqing Turbine Ltd.
83	Gongjiagou Hydroelectric Plant	10	2	CJA237-w-140/2×7.5	673.2	0.92	5.6	750	Chongqing Turbine Ltd.	2	SFW5000-8/2160	5	343	10.5	750	50	0.8	Chongqing Turbine Ltd.
84	Chahe Stage III Hydroelectric Plant	5.8	3	HLD54-WJ-84 (2); XJA-W-50/1*12 (1)	180; 150-180	1.9; 0.594 -0.65	2.5 (2); 0.699 — 0.918 (1)	1000	Yibin Fuyuan Electricity generation Equipment Ltd. (2) Sichuan Xinjinneijiang Turbine Production Ltd. (1)	3	SFW-K2500-6/1430 (two); SFW800-W-6/990 (one)	2.5 (2); 0.8 (1)	286.4 (2); 1442 (1)	6.3 (2); 0.4 (1)	1000	50	0.8	Chongqing Electric Machine Federation Ltd.PRC
85	Daihuanggou Hydroelectric Plant	8	2	CJA237-W-110/2×9	440	1.1	4.17	750	Lisong Hydraulic-electricity Technology Co.Ltd. Chongqing	2	SFWE-K4000-8/1730	4	458.2	6.3	750	50	0.8	Chongqing Electric Machine Federation Ltd.PRC
86	Gaoqiaohe Hydroelectric Plant	9.6	3	HL110—WJ—92 (two)	130(two);	2.997 (two);	3.351 (two);	750(two);	Kunming Electric machine	3	SFW3200-8/1730 (three)	3.2	366.6	6.3	750	50	0.8	Kunming Electric machine

				HLDT9-WJ-G2 (one)	130(one)	2.98(one)	3.2(one)	750(one)	Ltd.(two) Sichuan Dongfeng Electric machine Ltd. (one)									Ltd. (two) Sichuan Dongfeng Electric machine Ltd. (one)
87	Zhuyeshan Hydroelectric Plant	5	2	HLD261-WJ-75	185	3.5	2.5	1000	Yibin Fuyuan Electricity generation Equipment Ltd.	2	SFWE-K2500-6/1430	2.5	286.4	6.3	1000	50	0.8	Chongqing Sailimeng Electric Machine Co., Ltd
88	Lianghekou Hydroelectric Plant	10MW(2×4+1×2MW)	2	CJA237-W-130/2×13.6	285	1.81	4.21	500	Kunming Electric Machine Company	2	SFW4000-12/2150	4	458.2	6.3	500	50	0.8	Kunming Electric Machine Company
			1	CJA237-W-105/1×11	419	0.632	2.15	750		1	SFW2000-8/1430	2	229.1	6.3	750	50	0.8	
90	Dabaishu Hydroelectric Plant	3.2	2	HL120-WJ-61	185	0.913	1.6	750/1000	Yunnan Lancangjiang Electric Machine Co.	2	HPWE-K1600-6/1180 SFWE-K1600-6/1430	1.6	115		1000/1000	50/50	0.8/0.8	Yunnan Lancangjiang Electric Machine Co.
91	Dashi Stage III Hydroelectric Plant	3.2	2	HL120-WJ-61	300	1.19	1.6	1000/1000	Yunnan Lancangjiang Electric Machine Co.	2	HPWE-K1600-6/1180 SFWE-K1600-6/1430	1.6	212.3		1000	50/50	0.8/0.8	Yunnan Lancangjiang Electric Machine Co.
92	Dashi Stage II Hydroelectric Plant	4.2	2+1	HL100-WJ-65 HLA550-WJ-71	300	1.21	4.2 (1×2+2.2)	750/1000	Yunnan Lancangjiang Electric Machine Co.	2+1	LNP-K1000-6 (2)SFWE-K2200-610(1)	4.2 (1×2+2.2)	121.6/201		1000/1000	50/50	0.8/0.8	Yunnan Lancangjiang Electric Machine Co.
93	Yunnan Midu County Taishanhe Hydropower Station	5	1×1+2×2	HL100-WJ-65 HLA550-WJ-71	120/120	1.06/2.06	1.086/2.17	750/1000	Chongqing Sailimeng Electric Machine Co., Ltd	1×1+2×2	SFWE-K1000-6/1180 SFWE-K2000-6/1430	5	114.6/229	6.3/6.3	1000/1000	50/50	0.8/0.8	Chongqing Sailimeng Electric Machine Co., Ltd
94	Zhenyuan County Xiaojiehe Hydropower Station	5	004/005	HL110-WJ-78	95-170	1.8-2.6	1.72-3.4	750-1000	Zhejiang Jinhua Turbine Manufactory Company	2	SFW2500-6/1430	2.5	286.3	6.3	1000	50	0.8	Chaozhou Huineng Generator Manufactory Company
95	Jinghong City Chuangye Hydropower Station	8	2	CJA237-W-115/2×12	302-319	1.06	4.02	600	Zhejiang Jinhua Turbine Manufactory Company	2	SFW4000-10/2150	4MW	N/A	6.3	1000	50Hz	0.8	Zhejiang Jinhua Turbine

																		Manufacture Company
9 6	Yingjiang Husa River 5th Stage Hydropower Plant	8	2	HLD46- WJ-76	126.6	3.84	4.167	1000	Kuming Electrical Equipment Factory	2	SFW4000- 6/1730	4	458.2	6.3	1000	50	0.8	Kuming Electrical Equipment Ltd.Co.
9 7	Yunnan Province Jinping County Mengqiao Village Datan Hydropower Station	10	2	HLC437- WJ-93	128	4.744	2.041	750	Chongqing Turbine Factory Company Ltd.	2	SFW5000— 8/2160	5	572.8	6.3	750	50	0.8	Chongqing Turbine Factory Company Ltd.
9 8	Fugong County Lishadi Hydropower Plant Project	14	2	HLA1794 -WJ-100	285- 300	2.7- 3.0	6.794	1000	Yuxi Hydroelectric Equipment Factory Yunnan China	2	SFW7000- 6/2150	7	802	6.3	1000	50	0.8	Yunnan Yuxi Hydroelectri c Equipment Factory The People's Republic of China