



June 2012

İFTELAN ENERJİ ELEKTRİK ÜRETİM TİC. SAN. A.Ş.
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Üsküdar - ISTANBUL / TURKEY

Section 1 – İftelan Overview



The Portfolio

Project	Region	River	Project Capacity (MW)	Annual Generation (GWh)	Capacity Factor (%)	Construction Start	Construction Period (months)	Operation Start
İftelan	Black Sea	Yanbolu	17.65	46.426	34.9%	Aug 2010	33	Mar 2013

Section 2 – The Company

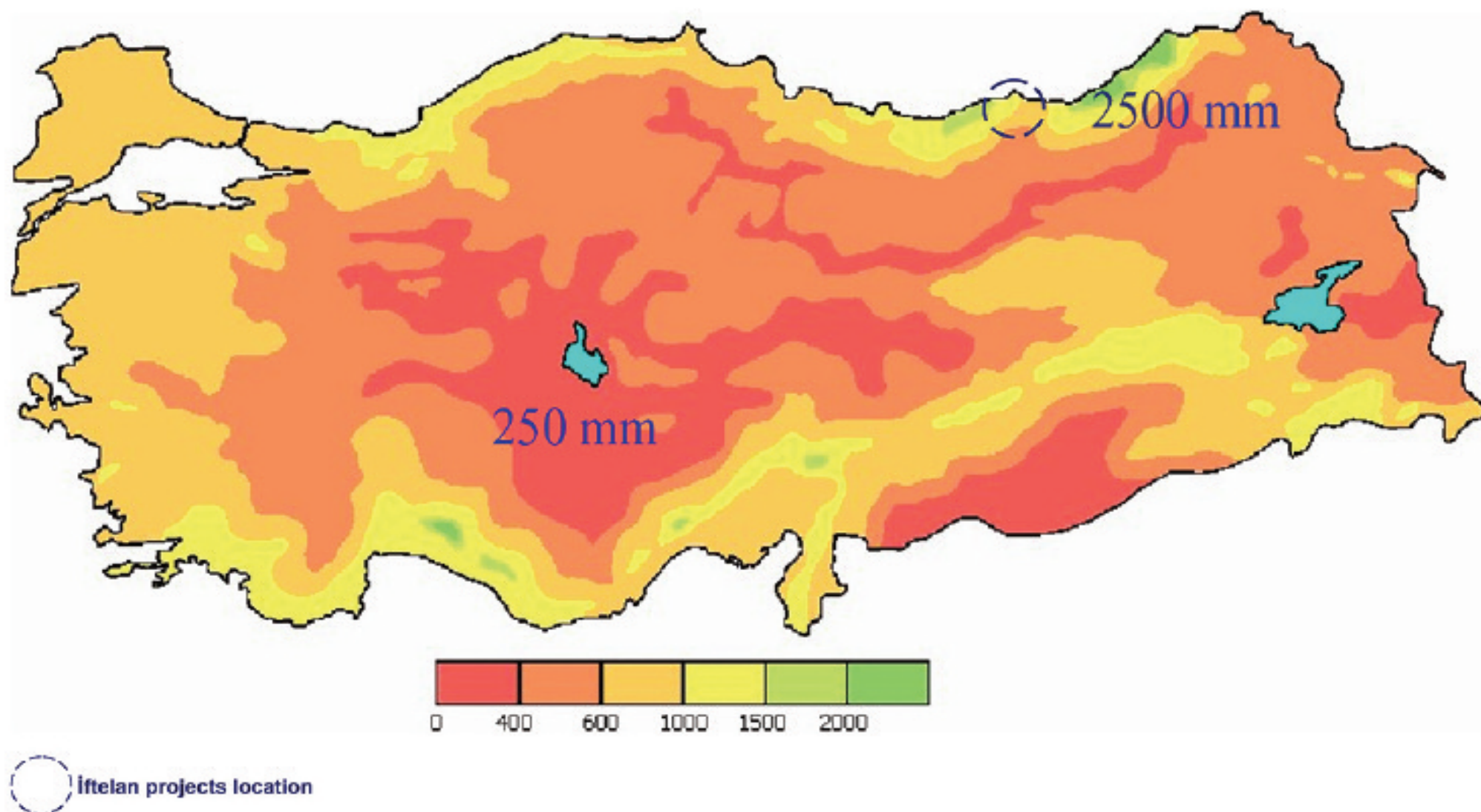
	İftelan
State Hydraulics Works (DSİ) approval for feasibility works	Completed
DSİ tender for license awarded (exclusive water right)	Completed
DSİ royalty fee (Converted into Euro from TRL for convenience)*	1.51 €/kWh
EMRA license application	Completed
Consents for grid inter-connection	Completed
Sign water usage agreement with DSİ	Completed
Issue of generation license by EMRA	Completed
Detailed topographic works	Completed

* Royalty fees are escalated to year 2009; and then converted into Euro with average EUR/TRY exchange rate equals to 2.0.

Section 2 – The Company

	<u>Iftelan</u>
Expropriation authority from EMRA & State Forestry Affairs	Completed
Preliminary Environment Impact Assessment ("EIA") sign off	Completed
Detailed geotechnical works	Completed
Final Feasibility – Including detailed project design & tender documents	In progress
E&M Supply Agreement	In progress
Contract for Civil Works	Completed

Section 3 – The Portfolio



Source: DSI

Section 3 – The Portfolio

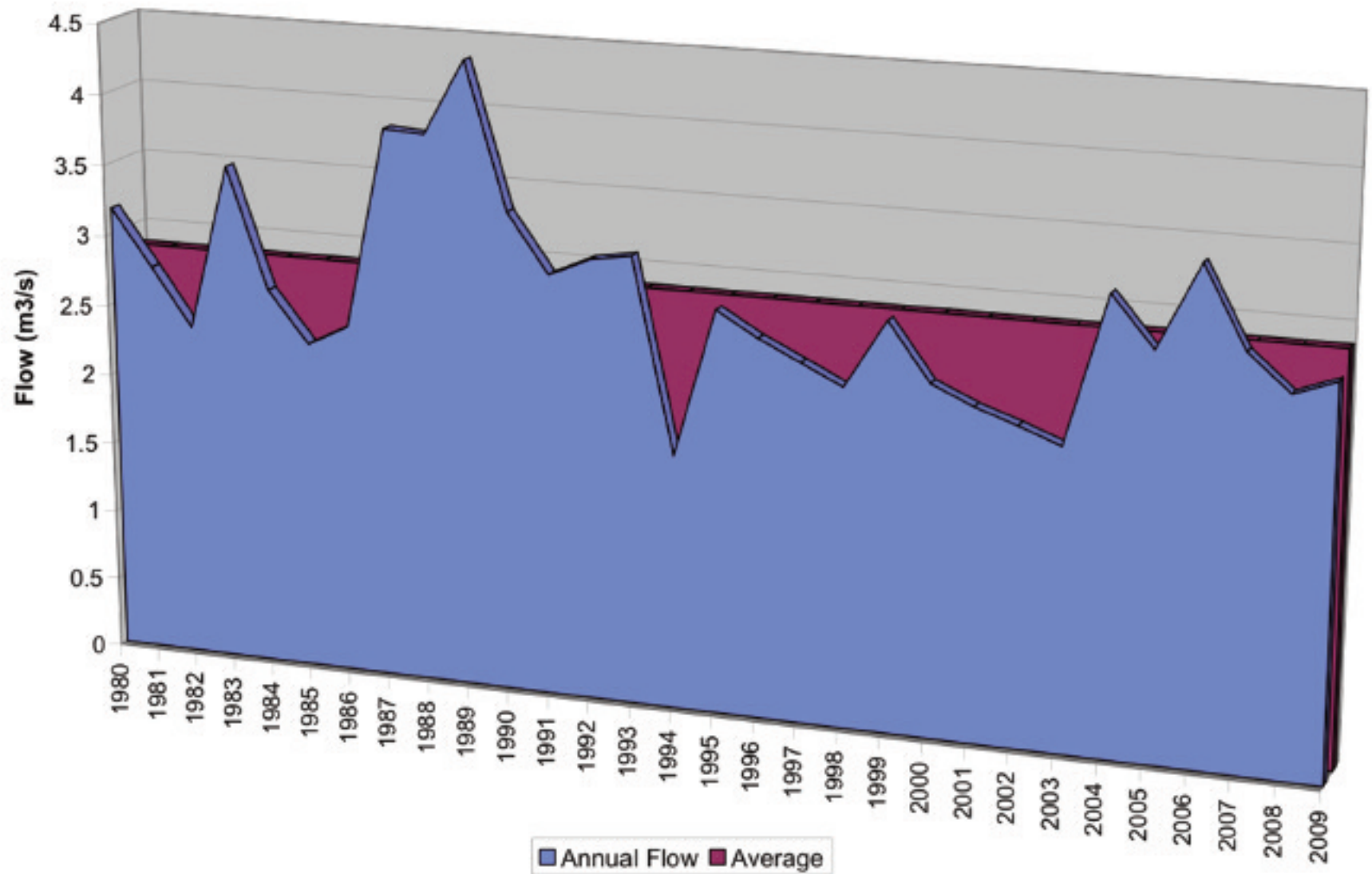
Overview

- **Capacity:** 17.65 MW
- **Net Generation:** Annual energy production of 46.426 GWh
- **Type:** Run-of-river
- **Location:** Over Yanbolu river in Arsin, Trabzon
- **Regulatory process:**
 - DSI contribution tender for Iftelan project has been awarded to Iftelan
 - DSI royalty fee is 3.01 kr/kWh (Tender date is 15.09.2006)
 - DSI water usage agreement has already been signed
 - Consents regarding connection to grid from state transmission company (TEİAŞ) has been obtained
 - EMRA license was obtained in March 2009 which is valid for 49 years

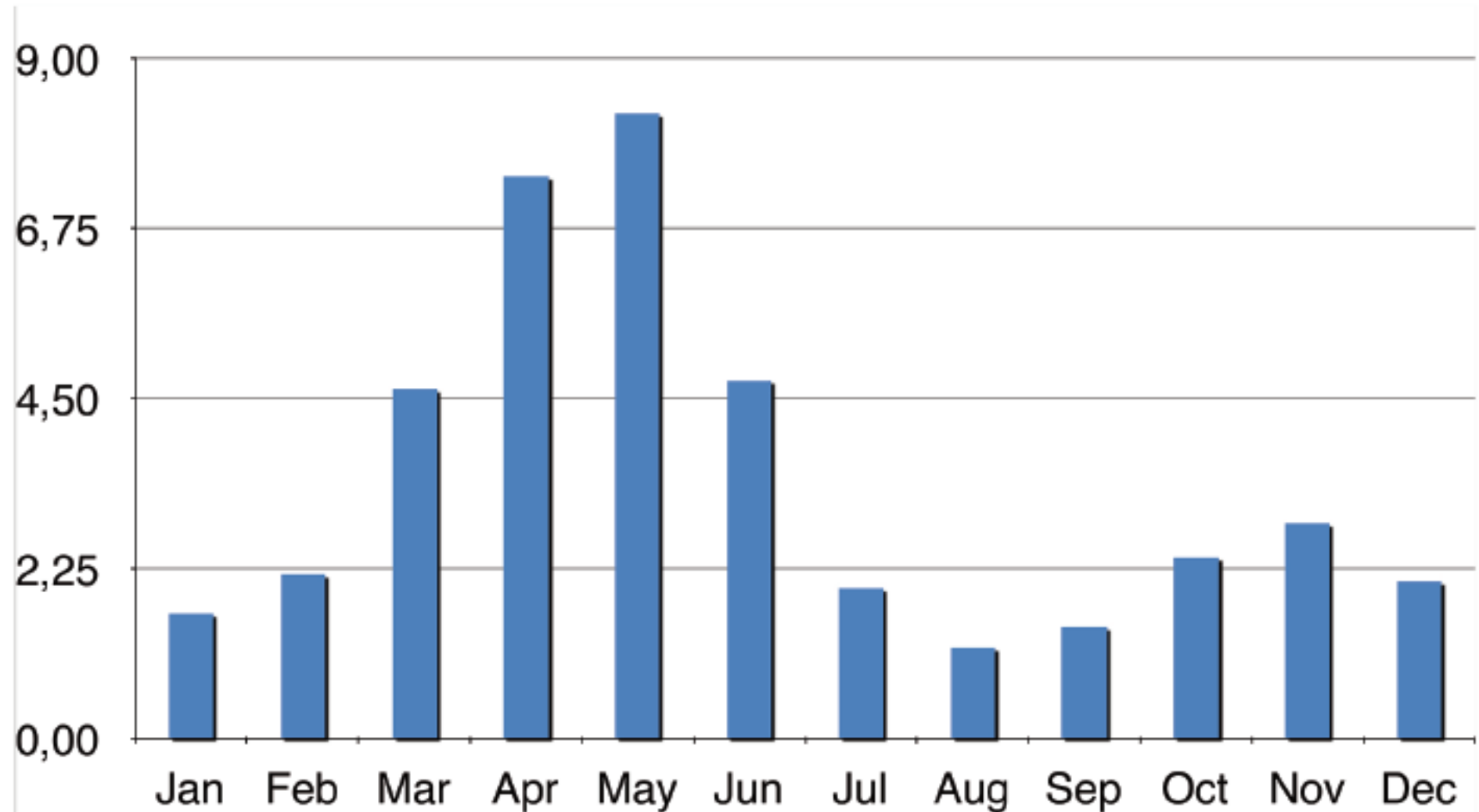
Geographical Location



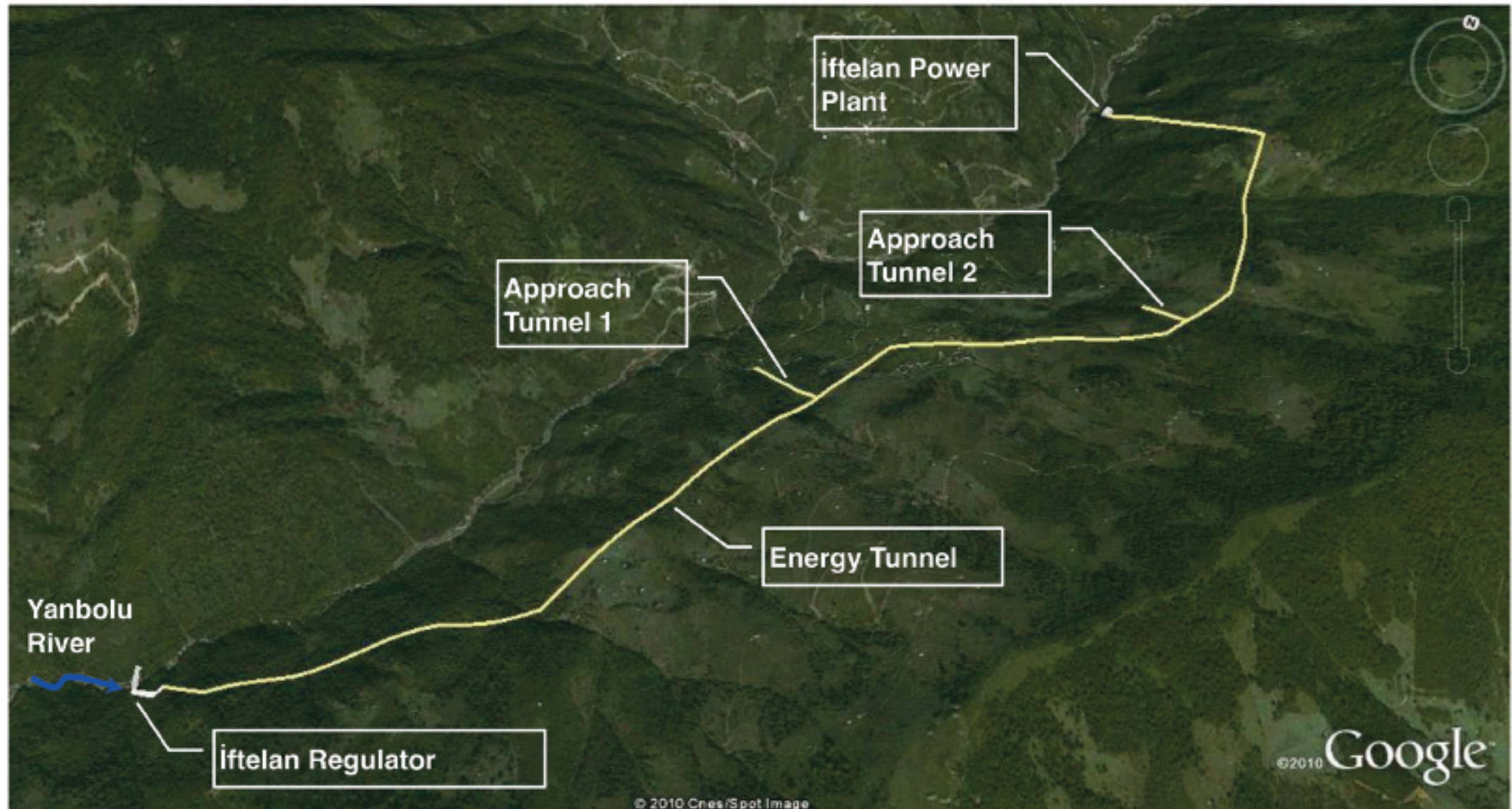
Section 3 – The Portfolio



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Hydrological Features

Drainage area	135.62 km ²
Average annual water flow	84.54 hm ³
Average annual flow rate	2.677 m ³ /s
Flood flow rate (Q_{100})	64.86 m ³ /s

Regulator

Type	Trol Weir
Thalweg elevation	961.00 m
Crest elevation	965.00 m
Weir width	14.00 m
Maximum water elevation (Q_{100})	966.70 m

SettlingBasin

Normal water elevation in front of the regulator	965.00 m
Number of boxes	1
Box width	6.00 m
Settling basin length	20.00 m

Ppressure Pipe

Type	Circular, CTP
Flowrate	7.50 m ³
Pipe Diameter	2.00 m
Pipe Length	295.00 m

Conveyance Tunnel

Type	Tunnel with concrete lining
Maximum flow rate	7.50 m ³ /s
Slope	Variable
Inside diameter	3.4 m
Length	4.748 m

Forebay

Normal Water Elevation	963.94 m
Maximum Water Elevation	964.14 m
Minimum Water Elevation	962.49 m

Penstock

Pipe Diameter	2.00 m
Lenght	12.00 m
Thickness	16 mm

Section 3 – The Portfolio

Powerhouse/Plant Structure

Type of powerhouse structure	Reinforced concrete open powerhouse
Turbine axis elevation	695.00 m
Tail water elevation	691.96 m (1 Turbine)
Plant length	41.00 m
Plant width	14.00 m
Plant height	12.25 m

Turbines

Turbine elevation	695.00 m
Type of turbines	Vertical axis Pelton turbine
Number of turbines	3
Turbine Unit Capacity	2 x 7.06 + 3.53 MW
Turbine Unit Flow Capacity	2 x 3.0 + 1.50 m³/s
Gross Head	268.94 m
Net Head	267.64 m
Efficiency at design flow	89.7%
Number of turnovers	1000 rpm

Internal Use Transformers

Number of units	1
Capacity	160 kVA
Voltage	6.3 / 0.4 kV

Transformers

Type	Open Oil Cooling Transformer
Number of units	3
Capacity	1 x 3.8 + 2 x 7.5 MVA
Nominal Voltage	6.3/31.5 kV ± 2x2.5%kV

Generators

Type of generators	Vertical axis synchronous generator
Number of generators	3
Generator capacity	1 x 3.8 + 2 x 7.5 MVA
Voltage	6.3 kV
Frequency	50 Hz.
Number of turnovers	600-1000 rpm
Power factor	0.9
Efficiency	97%

Switch Area

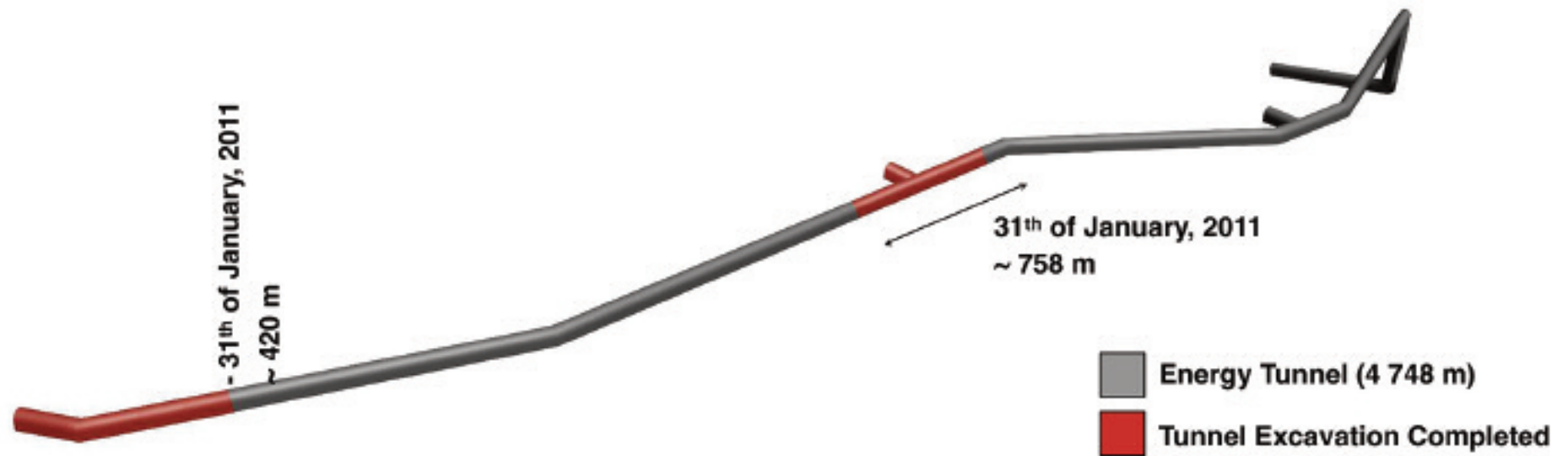
Located in the plant building in the form of 31.50 kV cubicles

Annual Energy Production

Total net energy production	46.426 GWh
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Section 3 – The Portfolio

- As of January 2011, only construction activity is energy tunnel excavation.



SECTION 4

SCHEDULE

Section 4 – Schedule

Electromechanical Equipment

- Manufacturing and shipment time is 12 months for Francis turbines and 16 months for Pelton turbines.
- Erection and installation is 3 months.
- Payment schedule:
 - 20% advance payment, 20% at submittal of drawings, 40% at factory acceptance, 20% at final acceptance.

Hydromechanical Equipment

- Manufacturing time is 4 months.
- Payment schedule:
 - 30% advance payment, 30% at factory acceptance, 40% at final acceptance.

Penstock

- Manufacturing time is 3 months.
- Payment schedule :
 - 30% advance payment, 30% at factory acceptance, 40% at final acceptance.

Construction Activities

- Costs of all other activities are allocated monthly in equal payments.

Section 4 – Schedule

	İftelan
Weir and settling basin	1,209,600
Conveyance Canal Pipe	344,481
Tunnel	9,058,073
Surge Tank	0
Headpond	0
Valve Room	0
Penstock	73,785
Powerhouse	590,000
Hydromechanical	200,000
Access Roads	375,000
Energy Transmission Line	225,000
Site Facilities	85,502
Electromechanical	3,784,200
Expropriation/Forest Adm.	250,000
Project, Engineering, Consultancy, Testing & Commissioning	1,415,257
Total Investment Cost (Euro)	17,610,899

SECTION 5

CASH FLOW

Section 5 – Cash Flow

- Royalty fees are escalated in accordance with the Water Usage Right's regulation.
- Day-ahead market (PMUM) average price is taken as 7.5 Euro-cent/kWh for 2012. Annual increase is assumed as 0.1 Euro-cent/kWh.
- GHG emission factor is taken as 0.55 tCO₂/MWh. GHG Reduction Average Price is taken constant as 5.5 €/tCO₂. Carbon revenue is calculated for 15 years.
- Operating costs (including fees) are increased 1.0% annually.
- Maintenance, repair, plant insurance (including earthquake insurance) and headquarter overhead costs are assumed as 1.0% of the turnover between 2010 and 2014 due to the guarantee period. After 2015, it is assumed as 2.0% of the turnover.
- Payroll expenses are assumed as 400.000 € annually for the whole generation portfolio.
- Double declining depreciation method is applied. Depreciation period of construction items are taken as 49 years and depreciation period of electromechanical equipment is taken as 15 years in accordance with Turkish Accounting Standards.
- On average, 65% of the CAPEX is subject to VAT and some imported equipment is exempt from VAT as per acquired government incentives, making an average of 11.7%.
- VAT on electricity sales is 18.0%.
- Deposit income rate for the income from electricity sales is taken 2.0% (simple annual rate). Average deposit duration is taken as 6 months.
- Loan assumptions for Turkish banks are 4.0% flat interest rate, 12 years maturity including 3 years grace period.
- "Receivable VAT Account" is deducted from "Payable VAT Account"; and included as cash inflows in cash flow calculation.
- The Değirmen HEPP Project is located upper section of the İftelan HEPP weir and has a storage capacity of 400.000 m³. The Değirmen HEPP will be operating within the hours of 17.00 - 24.00, when the sale price of the electricity is high. İftelan HEPP will be operating according to the Değirmen HEPP operation schedule with a capacity of 6,00 m³/s project flow, and there is another turbine with a capacity of 1,50 m³/s project flow to take the water coming from the drainage area between Değirmen HEPP weir and İftelan HEPP weir.

Section 5 – Cash Flow

- Internal losses (1.0%) and transmission losses (3.0%) are included in net generation calculations.

Name	Installed Capacity	Operating Time	Capacity Factor	Annual Net Generation	Operation Start	
	MW	hours	%	kWh	Year	Month
Iftelan	17.650	3,055.90	34.9%	46,426,000	2013	2

- The Portfolio is designed to benefit from voluntary carbon trading scheme.

No	Plant	Applicable Standard	Comments	Ghg Reduction Potential (tCO ₂ /year)	Annual Carbon Reduction Income (Euro)
1	Iftelan	VCS	Installed capacity is too large for GS.	23.213	127.672