

Technical guidelines for the development of small hydropower plants - Part 2: Site selection planning

Contents	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Planning principles	1
5 Planning scope	2
6 Planning methods and steps	2
7 Basic data collection and analysis	3
7.1 Data collection	3
7.2 Data analysis	4
8 Computation of river basin or sub-basin hydropower potential	5
9 Preliminary planning of site	7
9.1 Planning content and main considerations	7
9.2 Types of SHP stations and applicable conditions for development	7
9.2.1 Dam-type hydropower station	7
9.2.2 Diversion-conduit-type hydropower station	7
9.2.3 Reservoir-based, run-of-river hydropower station (hybrid)	8
9.3 Utilization of several special geographical conditions of rivers	8
9.3.1 Utilization of natural waterfalls	8
9.3.2 Utilization of rapids or natural waterfalls	8
9.3.3 Utilization of river bends	8
9.3.4 Utilization of the fall on an irrigation channel	8
9.3.5 Utilization of kinetic energy of flowing waters in a river or canal	8
9.4 Estimation of the development scale of a hydropower station	8
10 Site surveys and investigations	9
10.1 Hydrological surveys	9
10.2 Surveys on the planning site	10
10.2.1 Dam site surveys	10
10.2.2 Plant site surveys	10
10.2.3 Water conveyance line surveys	10
10.2.4 Reservoir survey	10
10.3 Preliminary determination of available water heads for the hydropower station	10
10.4 Other construction conditions for investigation	10
11 Preparation of site construction plan	11
11.1 Selection of installed capacity	11
11.2 Selection of turbine types	11
11.3 Number of units	11
11.4 Selection of dam type	11

11.5	Selection of spillway structures	12
11.6	Selection of water intake structures	12
11.7	Selection of diversion structures	12
11.8	Types of powerhouse	13
11.9	Location of switchyard	13
11.10	Location of tailrace	13
11.11	Layout of main structures	13
12	Preliminary assessment of social and environmental impacts	13
13	Assessment of power demand	14
	IWA 33-2:2019(E) 14 Costestimationandbenefitsassessments	14
15	Evaluation of planning site and development sequence recommendations	15
16	Preparation of site selection planning report	15
	Annex A (informative) Computation of theoretical potential of river water energy, estimation formula for installed capacity on a planned site	16
	Annex B (informative) Schematic diagram of development types and special terrain utilization of SHP stations	19
	Annex C (informative) Outline of a site selection planning report	24
	Annex D (informative) Workshop contributors	29