

Supplementary Materials

Table S1. Findings of the Flood Action Plan and Potential Sites [38].

Name of River and Site	Yearly Average, Max, Min flow rate (m ³ /s)		
	Min	Mean	Max
Meghalaya Group			
Kangsha at Jariajanjal	16.7	274.3	738.5
Sari-gowain at Sarighat	6.4	128.2	381.9
Barak Group			
Surma at Kanairghat	6.4	524.4	1429.3
Surma at Sylhet	7.8	545.0	1470.1
Kushiyara at Sheola	80.8	660.0	1610.0
Sonai-Bardal at Jaldhup	7.2	138.8	331.6
Tripura Group			
Manu at Manu River Barage	10.4	83.7	182.2
Brahmaputra Group			
Old Brahmaputra at Mymensingh	19.4	704.9	2055.5
Lakhya at Demra	38.8	692.3	1750.9
Old Brahmaputra at Bhairab Bazar	4.3	123.3	452.5

Table S2. Classification of Impulse Turbine [49]

Head (m)	Types of Turbine
(i) High head (> 100 m)	(a) Pelton turbine
	(b) Turgo turbine

(ii) Medium head (30 – 100 m)	(a) Pelton turbine
	(b) Turgo turbine
	(c) Multijet Pelton turbine
(iii) Low head (2 – 10 m)	(a) Crossflow turbine
	(b) Multi jet turbine
	(c) Turgo turbine
(iv) Ultra low head (< 2 m)	(a) Water-wheel turbine

Table S3. Turbine Classification [55]

Turbine Name	Head Range (m)	Suitability
Pelton	Above 240m	high head turbine and low specific speed
Francis	55 m to 240 m	medium head turbine and medium specific speed
Kaplan	From 30m	low head turbine and high specific speed
Bulb Turbine	From 3m to 23 m	Large rivers with high flow
S-Type Turbine.	From 1 m to 15 m	Low water head
Cross-Flow Turbine.	Up to 180 m	Medium head
PIT Turbine.	Below 15 m	Low water head

Table S4. Various Loss in Penstock [57]

Loss Type	Classification	Comments
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1) Friction against pipe wall

It depends on the material roughness and velocity gradient of water adjacent to the pipe wall.

2) Minor losses:

1) Head loss by sudden contraction

2) Head loss by the entrance

3) head loss in bends

4) Head loss through valves

It occurs because of turbulence. As water flows because of sudden entrance, bending, contraction and loss in valves, these minor losses occur.

3) Loss due to the surge of water hammer

Water flow is not always constant and sometimes there occurs high pressure which eventually creates water blockage and loss occurs.
