

# Introduction

---

**G**ENERATING ELECTRICITY FROM WATER POWER, HYDROELECTRICITY, is the largest source of renewable energy in the world today.

Microhydroelectric systems generate electricity from small water powered alternators.

Even at the smallest of scales, water power continues to be a most reliable and cost effective way to generate electrical power with renewable technology. Yet, getting the relevant information to recognize and develop a microhydro site successfully has been remarkably difficult to find for many years.

I dropped out of graduate school in 1977 to work on a project that included, among other things, a village scale microhydro project. In the decades that followed, I owned, operated, repaired, sold and generally fooled around with microhydro technology. Every site I visited had many unique features and some common ones as well. Out of this experience, this book brings you a range of solutions to supplying energy from flowing water, from the smallest and simplest systems, up to a relatively high output system.

There's more than one way to read this book. If you want to know about the topic as a whole, just start at the beginning and go all the way through. You will get an idea of the range of sites that are practical to develop, how different site features can be opportunities or obstacles, and something about costs as well.

Or, you may have a particular site in mind, and a pressing need to figure out what to do. Let's say it's getting on to be winter and you are wondering if you could develop a renewable energy supply that, unlike solar, would work through the dark part of the year.

Here's how you can get what you need from this book:

It begins with a short introduction to electricity and to hydraulics, which describes how water behaves. If you are confident in these areas, you can skip this part.

But then, do the self assessment, Chapter Two, to understand what size and kind of system will meet your needs. If you believe that you have a clear idea of your needs, and the budget to make it happen, you could skip this part.

Next, move to assessing your site, Chapter Three, to see if you can find the waterpower potential you need. If your first survey turns up empty, go back to the self-assessment and see if a smaller system could meet your needs with electronics rather than with waterpower alone. Many small sites go unappreciated.

After you assess your needs and your site, everyone should read Chapter Four. It will assist you in determining the system that is appropriate for you by comparing how you rated your needs in the self assessment score with systems that have met those needs successfully. It explains the various technologies that are brought together to make a successful microhydro system, from small battery charging systems to ones that are large enough for a small village. If you are in a real hurry, just read about the kind of system you are planning. However, it never hurts to be familiar with the alternatives that are available to you.

Chapter Five goes into detail about getting started with your microhydro system. Everyone should read this chapter as well.

Chapter Six discusses incentives and regulations. These are important, local factors that can easily make or break a project.

Chapter Seven is a collection of case studies. Here you can find examples of successful systems, one of which probably looks like the one you are planning. Each illustrates important elements in successful microhydro developments.

There's a glossary at the end to help with any unfamiliar terms.

Now you're ready for Chapter One, What is Microhydro?

---

Many times, people overestimate the amount of power they need. This may lead them to overlook significant resources.

---