

Mini-and Micro-hydropower Development In the Hindu Kush-Himalayan Region Achievements, Impacts and Future Prospects

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Introduction

Mini-and Micro-Hydropower (MMHP) has been used for milling in the region for many centuries. Although modernisation in water mill technology started around the turn of the century in the West, its progress as an alternative energy source took place only after the oil crisis of 1973, along with that of other renewable technologies. China has been in the forefront of MMHP development since the early 50s and, at present, has 45,700 MMHP plants with a total installed capacity of about 6,000 MW.

Hydropower as such is considered environmentally-benign, and hydropower in the MMHP range is considered even more so. It is compatible with the local environment and has many advantages over other energy sources. It is decentralised and easy to manage and operate. Unfortunately, only a small fraction of the MMHP potential is realised in the Hindu-Kush-Himalayan (HKH) Region. The development of a cheap and non-polluting source of energy in the HKH region faces many challenges of development and a deteriorating environment are among them.

PART I

Summary of the MMHP Installation Programme in the HKH Region

Considerable progress has been made in five countries of the HKH region, in terms of the number of installations in the MMHP range. In India and Pakistan, the share of MMHP is less than one per cent of the total harnessed hydropower, although its potential share could exceed 10 per cent. In China, this share is about 20 per cent.

Bhutan

Most of the electromechanical components of the 19 MMHP installations, with a total capacity of 3-40 MW, have been imported from and funded by Japan and India. MMHP plants in Bhutan were designed and installed by foreign consultants. The Royal Government of Bhutan does not have any future expansion plans for MMHP. Government agencies consider MMHP plants to be expensive and economically non-viable. Out of a total of 19, 10 MMHP plants were handed over to user communities for operation, maintenance and power distribution. The communities were also