OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

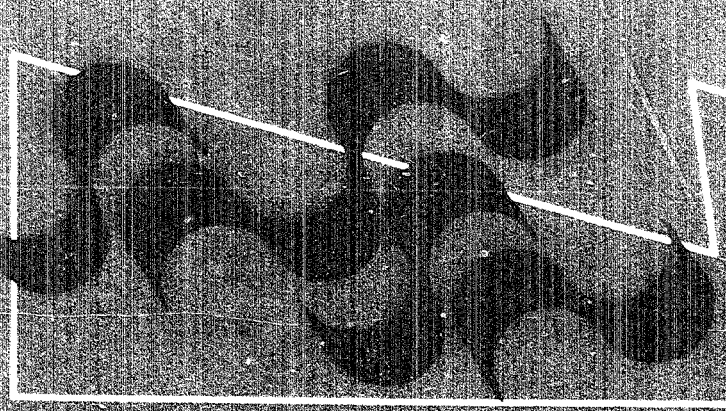
FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org



small hydropower series No. 2

BIBLIOGRAPHY

Prepared in co-operation with
the Russian Research Institute for Small Hydropower

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

ABSTRACT
Ref.: ID/SER.N/2
April 1985
New York

SMALL HYDROPOWER SERIES No. 2
BIBLIOGRAPHY

SERIE : PETITES CENTRALES HYDROELECTRIQUES, Nº 2
BIBLIOGRAPHIE

SERIE PEQUEÑAS CENTRALES HIDROELECTRICAS No. 2
BIBLIOGRAFIA

ABSTRACT / SOMMAIRE / EXTRACTO

Printed in Austria
V.85-25013—May 1985—4,500

ID/SER.N/2/Abstract
English/French/Spanish

ABSTRACT

Mini-hydropower generation, which was a major force for industrial progress in the nineteenth century, later eclipsed by cheap and abundant fossil fuels and massive hydropower installations, is again attracting international attention.

The reasons are numerous. In many regions, water power remains an abundant, largely untapped resource that is not only renewable but, also, relatively cost-efficient and free of environmental problems. Mini-hydropower is particularly suited to the capabilities and energy requirements of rural populations. The technology is well-tried and simple and adaptable to different conditions. Construction can often be accomplished using local skills, labour and materials. Structures and machinery are extremely durable and, once installed, necessitate few operating and maintenance costs. A mini-hydropower plant can be used for irrigation, flood control, drinking water, fish farming in addition to providing electric power and light.

Although the building and operation of mini-hydro plants present few serious difficulties, the realization of long-term benefits requires painstaking care and expert guidance in the planning and design of each installation. This bibliography, addressed to policy makers, planners, investors, technicians and others, covers a wide range of information materials on all aspects of mini-hydropower. The bibliography is arranged alphabetically by title under various chapter headings and contains author, corporate name, conference and subject indexes. It was prepared by the Regional Network for Small Hydro- power (RN-SHP), created in 1982 under the United Nations Development Programme, the Economic and Social Commission for Asia and the Pacific and UNIDO.

SOMMAIRE

Les petites centrales hydroélectriques, dont l'exploitation a été l'un des principaux moteurs du progrès industriel au cours du XIXe siècle avant d'être éclipsée par la mise en valeur d'autres sources d'énergie comme les combustibles fossiles à la fois bon marché et abondants et par la construction de centrales hydroélectriques massives, retiennent à nouveau l'attention sur le plan international.

Il y a à cela de nombreuses raisons. Dans bien des régions, l'énergie hydraulique reste une source abondante et largement inexploitée qui, à l'avantage d'être renouvelable, ajoute ceux d'être relativement rentable et de ne poser aucun problème environnemental. Les mini-centrales hydroélectriques sont particulièrement adaptées au potentiel et aux besoins énergétiques des populations des zones rurales. Elles reposent sur des techniques éprouvées et simples, qui peuvent être adaptées à des conditions très diverses. Il est souvent possible de les construire en utilisant les compétences, la main-d'oeuvre et les matériaux locaux. Bâtiments et machines sont extrêmement durables et, une fois installés, n'entraînent guère de frais d'exploitation et d'entretien. La mini-centrale hydroélectrique peut servir à l'irrigation, à la protection contre les crues et les inondations, au développement des ressources en eau potable, à la pisciculture, sans parler de la production d'énergie électrique et de l'éclairage.

Si les mini-centrales hydroélectriques ne présentent guère de difficultés graves en ce qui concerne la construction et l'exploitation, il faut, pour en tirer tout le profit possible à long terme, consacrer beaucoup de temps, de soin et de compétence à la conception et à l'élaboration de chaque installation. La présente bibliographie qui s'adresse aux dirigeants, planificateurs, investisseurs, techniciens, etc., fournit une gamme étendue de renseignements sur tous les aspects des mini-centrales hydroélectriques. Présentée dans l'ordre alphabétique des titres pour chacun des chapitres, elle est assortie d'index d'auteurs, de noms de sociétés, de conférences et de sujets. La bibliographie a été établie par le réseau régional des petites centrales hydroélectriques créé en 1982 dans le cadre des activités du Programme des Nations Unies pour le développement, de la Commission économique et sociale pour l'Asie et le Pacifique et de l'ONUDI.

EXTRACTO

La generación de energía en pequeñas centrales hidroeléctricas, que durante el siglo XIX fue una de las grandes fuerzas del progreso industrial, pero que posteriormente fue eclipsada por los combustibles fósiles baratos y abundantes y las grandes instalaciones hidroeléctricas, vuelve a atraer la atención general en todo el mundo.

Las razones son múltiples. En muchas regiones, la energía hidráulica sigue siendo un recurso abundante y poco aprovechado, que no sólo es renovable, sino también relativamente barato y que no plantea problemas ambientales. Las minicentrales hidroeléctricas responden especialmente a la capacidad y a las necesidades de energía de la población de las zonas rurales. Su tecnología ha sido debidamente ensayada, es muy sencilla y se puede amoldar a diferentes situaciones. A menudo las actividades de construcción pueden realizarse con expertos, mano de obra y materiales locales. Las estructuras y la maquinaria son de larga duración y, una vez instaladas, sus costos de funcionamiento y conservación son bajos. Una minicentral de energía hidroeléctrica puede ser utilizada para el riego, la prevención de las inundaciones, el abastecimiento de agua potable, y la piscicultura, además de proporcionar energía eléctrica y luz.

Aunque la construcción y el funcionamiento de las minicentrales hidroeléctricas plantean pocas dificultades importantes, la obtención de beneficios a largo plazo exige una atención muy cuidadosa, así como el asesoramiento de expertos en la planificación y el diseño de cada instalación. La presente bibliografía, destinada a los responsables de las políticas en esta materia, planificadores, inversionistas, técnicos y otras personas, abarca una serie de materiales de información sobre todos los aspectos de las minicentrales hidroeléctricas. La bibliografía se ha clasificado por orden alfabético de los títulos, con arreglo a varios epígrafes de capítulos, e índices por autores, nombre de empresas, conferencias y temas. Ha sido preparada por la Red Regional de Pequeñas Centrales Hidroeléctricas (RN-SHP), creada en 1982 en virtud del Programa de las Naciones Unidas para el Desarrollo, la Comisión Económica y Social para Asia y el Pacífico y la ONUDI.

BIBLIOGRAPHY

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna

Small Hydropower Series No. 2

BIBLIOGRAPHY

Prepared in co-operation with
the Regional Network for Small Hydropower

UNITED NATIONS
New York, 1985

ID/SER.N/2
ISSN 0256-727X

Introduction

Mini-hydropower generation is nothing new. It served as a major force for industrial progress in the nineteenth century, and its basic technology has proved as durable as the falling waters from which it first drew electricity over 100 years ago. Although eclipsed as a favoured energy source in later decades, when fossil fuels were cheap and abundant and economies of scale dictated massive hydropower installations, small-scale water power is again attracting large-scale attention in all parts of the world.

The reasons for this revival of interest in small capacity hydro systems are varied and numerous. In many regions water power remains an abundant, largely untapped resource that is not only renewable but also, when generated in mini plants, relatively cost-efficient and free of the environmental problems associated with large dams, nuclear power, and the burning of coal and oil. Mini-hydropower is particularly suited to the capabilities and energy requirements of the population in rural areas of developing countries, where large installations are impractical, uneconomical, and time and cost-consuming.

The technology of mini-hydropower is well-tried and simple, and can be adapted to a variety of needs and conditions. Construction can often largely be accomplished using local skills, labour and materials. The structures and machinery are extremely durable and, once installed, demand little in the way of operating and maintenance costs. A mini-hydropower plant can serve as the central point for the industrialization of rural areas, and can also be used for irrigation purposes, flood control, drinking water, fish farming etc., in addition to providing electric power and light.

Although the building and operation of mini-hydro plants present few serious difficulties, the realization of long-term benefits requires time, painstaking care and expert guidance in the planning and design of each installation. This bibliography has been prepared with a view to furthering that process by making a wide range of information on all aspects of mini-hydropower available to policy makers, planners, investors, technicians, and all who might have a hand in moving a project from the initial phase to the first kilowatt of generated power.

The terms "small", "mini", and "micro", as applied to hydro-electric power, are defined differently by different authorities; all refer to units ranging from 1-15 MW. Specific capacities have been given wherever possible. The bibliography is arranged alphabetically by title under various chapter headings, and contains an index to facilitate reference to particular topics.

The preparation of a bibliography on mini-hydropower is one of the priority activities to be undertaken in the region covered by the Economic and Social Commission for Asia and the Pacific (ESCAP), by the Regional Network for Small Hydro Power (RN-SHP), which was created in 1982 under the UNDP-ESCAP Regional Energy Development Programme. It was agreed that the present volume would be contributed by UNIDO as a demonstration of support for the activities of the Regional Network.

The bibliography is by no means complete. Readers are therefore kindly requested to forward to the United Nations Industrial Development Organization (UNIDO) details of any material in the field of mini-hydropower that has been omitted, preferably with a copy of the publication in question.

UNIDO cannot supply copies of documents, articles or books from sources other than UNIDO: readers should apply directly to the publisher indicated in the bibliography. In the case of material issued by UNIDO, "hard" (printed) copies can only be supplied if the material is less than two years old. Material more than two years old is normally obtainable on microfiche directly from the United Nations Sales Section, Geneva, Switzerland (for readers in Africa, Europe and Western Asia), or from United Nations Headquarters, New York (for Asia and the Pacific and North and South America).

Any other inquiries should be addressed to :

Technology Programme, United Nations Industrial Development Organization (UNIDO), Room D-1944, Vienna International Centre, P.O. Box 300, A-1400 Vienna, Austria, telex: 135612, telephone (0222) 26 31 3722.

CONTENTS

BIBLIOGRAPHICAL ENTRIES

TITLE: Advisory and consultancy capabilities in the field of small-scale hydro-electric power generation
CORPORATE NAME: INTERMEDIATE TECHNOLOGY DEVELOPMENT GROUP.
SOURCE: London, UK, ITDG, 1978.
SUBJECT: Mini-Hydroelectric power planning
Results of development and testing program of small hydro-electric turbines. Plans for pilot project using the Evans hydro-electric system, particularly suited for heads in a range from 2 - 10 meters 0001

TITLE: Aeration of hydro releaases at Ft. Patrick Henry Dam
AUTHOR: Ruane, R.J.
Vigander, S.
Nicholas, W.R.
SOURCE:
SERIES: ASCE journal, Hydraulic Division, v. 103, no. 10, 1977, pp. 1135-1145
SUBJECT: Mini-Hydroelectric power
Method for increasing dissolved oxygen concentrations in the turbine releases from hydroelectric power plants: oxygen injection by use of small-pore diffusers located upstream from the turbine intakes. Tested two different diffusers for oxygen transfer efficiency, and the effect of spacing between diffusers on oxygen transfer efficiency 0002

TITLE: Alternative natural energy sources
AUTHOR: Davis, A.J.
Schubert, R.P.
SOURCE: New York, NY, USA, Van Nostrand Reinhold, 1974. See pp. 87-97
SUBJECT: Mini-Hydroelectric power
Assessing stream potential, /dam/ type and location, /water wheels/ and /hydraulic rams/ 0003

TITLE: Analysis of environmental issues related to small-scale hydroelectric development. I. Dredging

AUTHOR: Loar, J.M.
Dye, L.L.
Turner, R.R.
Hildebrand, S.G.

SOURCE: Washington, D.C., USA, US Dept. of Energy, 1980. 148 p.

DOCUMENT NO.: NTIS:ORNL/TM-7228

SUBJECT: Mini-Hydroelectric power
Physical and chemical effects of /dredging/ and disposal, and accompanying biological effects, to guide developers of potential sites. Also includes guidelines for determining environmental feasibility, and information on dredging equipment and disposal practices applicable to small /reservoir/s 0004

TITLE: Analysis of environmental issues related to small-scale hydroelectric development IV: fish mortality resulting from turbine passage

AUTHOR: Turbak, S.C.
Reichle, D.R.
Shriner, C.R.

SOURCE: Washington, DC, USA, US Dept. of Energy, 1981. 120 p.

SUBJECT: Mini-Hydroelectric power
Review of literature concerning turbine-related /fish passage/ mortality. Conventional and pumped-storage hydroelectric facilities. One study on /bulb turbines/ (Kaplan runners) 0005

TITLE: Analysis of environmental issues related to small-scale hydroelectric development. V. Instream flow needs for fishery resources

AUTHOR: Loar, J.M.
Sale, M.J.

SOURCE: Washington, DC, USA, US Dept. of Energy, 1981. 135 p.

SUBJECT: Mini-Hydroelectric power
Evaluating environmental effects of planned modifications in hydrologic patterns, particularly with respect to /fish passage/ 0006

TITLE: Anexo suplementario a la guia para la elaboracion de proyectos de pequenas centrales hidroelectricas destinadas a la electrificacion rural del Peru
AUTHOR: Nozaki, T.
SOURCE: Lima, Peru, Ministerio de Energia y Minas, 1981. 57 p.
SUBJECT: Mini-Hydroelectric power
Extends author's original guide to selection and standardization of equipment - mainly turbines and /generators/. Also some standard designs for /intakes/, /forebay/s, and /power house/s 0007

TITLE: Application of mini-hydro power to developing countries
AUTHOR: Stancescu, Ion
SOURCE: New York, NY, Centre for Natural Resources and Energy, 1979.
SUBJECT: Mini-Hydroelectric power 0008

TITLE: APPLICATION OF PRESTRESSED CONCRETE PIPES IN SMALL HYDRO-ELECTRIC STATIONS.
AUTHOR: HUANG BINGNAN
CAI XUXIAN
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 20 p. tables, diagrams.,
DOCUMENT NO.: UNIDO-ID/WG.329/27
SUBJECT: Application of prestressed concrete pipes in small hydroelectric power stations in China - (1) experience in small stations with a water head of less than 218 metres (2) structural design and computation of pipe; quality control and examination of pipe manufactured with a three-stage technology centrifugal process 0009

TITLE: APPLICATION OF RELIEF VALVES IN SMALL HYDROELECTRIC STATIONS.
AUTHOR: CHOU TAIJING
DAI JUNNIAN
FU WENYUAN
ZHONG CHENGGANG
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 9 p. tables, diagrams, graphs.,
DOCUMENT NO.: UNIDO-ID/WG.329/28
SUBJECT: Application of relief valves in small hydroelectric power stations - (1) type TFW-400 relief valve with all-oil control system (2) stability and transient process quality of the turbines /control mechanisms/ employing relief valve (3) serial /design/ of the relief valve and its application 0010

TITLE: Applications of mesh model for evaluation of small hydro
AUTHOR: Limaye, Dilip R.
Hough, Thomas C.
Colville, Glenn R.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June 1981
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, pp. 611-26
SUBJECT: Mini-Hydroelectric power
/Computer economic model/ for evaluation of small-scale hydro projects. Calculates annual energy output with cost benefit analysis associated with alternative designs of 3.5 Mw Flat Rock dam project in Philadelphia, USA. Selects optimal turbines type and size for net stream flow 0011

TITLE: Appropriate technology in hydropower
AUTHOR: Tegtmeyer, Rene D.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings: pp. 486-92
SUBJECT: Mini-Hydroelectric power
Patents for small-scale hydroelectric power systems. Trends in selected fields summarized. Information to be consulted to ensure selection of the best technology for any particular project 0012

TITLE: Appropriate technology sourcebook
AUTHOR: Darrow, K.
Pam, R.
SOURCE: Mt. Rainier, MD, USA, VITA, 1976. pp. 154-163
SUBJECT: Mini-Hydroelectric power
A practical book dealing with water technology for village and small community use.
0013

TITLE: Automatic control of small hydroelectric plants
AUTHOR: Frick, P.A.
CONFERENCE: IEEE/ASME/ASCE Joint Power Generation Conference, Phoenix, AZ, USA, 28 September-2 October 1980
SOURCE: Piscataway, NJ, USA, IEEE, 1980.
DOCUMENT NO.: Pap 80 JOGC 805-2
SUBJECT: Mini-Hydroelectric power
Model depicting dynamic behavior of /reservoir/s, used in design of automatic controllers. Equipment and modifications to perform /flow control/. System model for small hydroelectric plants. Digital /computer simulation model/
0014

TITLE: Available low head hydro technology
AUTHOR: Wayne, Warner W., Jr.
CONFERENCE: Energy Technology Conference, 6th, Washington, DC, USA, 26-28 February 1979
SOURCE: Washington, DC, USA, Gas Research Institute, 1979.
DOCUMENT NO.: CODEN:ENTED9
SERIES: Proceedings, v. 2, pp. 932-50
SUBJECT: Mini-Hydroelectric power
Descriptions and data on turbines and /generators/ equipment, and information on small packaged units and standardization of designs. Costs information for preliminary assessments of potential /low head/ hydro sites
0015

TITLE: BEGINNING OF HYDRO-ELECTRIC GENERATION IN FIJI ISLANDS.
AUTHOR: Abramski, J.
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 5 p.,
DOCUMENT NO.: UNIDO-ID/WG.376/11
SUBJECT: Small hydroelectric power generation in Fiji Islands - (1) electric power supply and MHG development potential (2) the Vatukarasa Micro Hydro Electricity Scheme: history, failures, faults, improvements 0016

TITLE: Building a micro hydro scheme
AUTHOR: Finnie, T.J.
CONFERENCE: New Zealand Energy Conference, 4th, Aukland, New Zealand, May 1979
SOURCE:
SERIES: Proceedings, v. 2, no. 6. pp. 108-14
SUBJECT: Mini-Hydroelectric power
/Design/ and construction of a small-scale hydroelectric power station which replaced an existing diesel fuel-powered generating station in New Zealand. Transmission, /speed control/ /lubrication/, and turbines systems. Financing and capital costs aspects 0017

TITLE: Building an overshot wheel
AUTHOR: Bassett, C.D.
SOURCE: Hendersonville, NC, USA,
SUBJECT: Mini-Hydroelectric power
Overshot /water wheels/ 0018

TITLE: BYS (Balaju Yantra Shala) Cross-flow turbines
AUTHOR: Adam, C.
SOURCE: Arbon, Switzerland, Swiss Association for Technical Assistance, 1974. 51 p.
SUBJECT: Mini-Hydroelectric power
Technical paper illustrating how to construct /crossflow turbines/ in the 10 to 40 kW range based on designs developed in Nepal 0019

TITLE: Case study of the planning and construction of a mini hydro power plant:
CONFERENCE: Seminar-Workshop on Mini Hydroelectric Power Generation, Kathmandu, Nepal, 1979
SOURCE: Oslo, Norway, Norconsult A.S., 1979. 32 p., illustrations, diagrams
SUBJECT: Mini-Hydroelectric power
/Renovation/ of a mini hydro plant in Norway dating from 1911, requiring replacement of mechanical and electrical equipment. New /asynchronous generators/ unit with a capacity of 1700 kW will feed into a large regional grid. Specifications for hydraulic and electrical equipment in Appendixes 1 and 2 respectively 0020

TITLE: CASE STUDY OF THE PLANNING AND CONSTRUCTION OF A MINI-HYDRO-POWER PLANT.
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO
NORWEGIAN WATER RESOURCES AND ELECTRICITY BOARD.
SOURCE: VIENNA, 1980. 21 P. TABLES, MAP.,
DOCUMENT NO.: UNIDO-ID/WG.305/36
SUBJECT: CASE STUDY OF PLANNING AND CONSTRUCTION OF A SMALL HYDROELECTRIC POWER PLANT IN NORWAY - (1) /RENOVATION/ OF AN EXISTING SMALL STATION BUILT IN 1911 (2) BACKGROUND, /DESIGN/, PREINVESTMENT STUDY (3) CHOICE OF TURBINES AND OF /GENERATORS/ (4) STATION ARRANGEMENT (5) ECONOMIC ASPECTS, COSTS (6) FIELD WORK, PLANNING, MAIN CONTRACT TERMS, SPECIFICATIONS, PROJECT IMPLEMENTATION 0021

TITLE: Cataract hydroelectric development expansion study
CORPORATE NAME: CENTRAL MAINE POWER COMPANY.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 68 p.
DOCUMENT NO.: NTIS:DOE/ID/01796-1
SUBJECT: Mini-Hydroelectric power /renovation/
Study indicates head and unused flow will support addition of 6,250 kW to present /Kaplan turbines/ type machine. Additional costs of /fish passage/way estimated 0022

TITLE: Central hidroelectrica colca; e studio preliminar
AUTHOR: Suazo, M.
SOURCE: Lima, Peru, Consorcio Hidroelectrico S.A. Electroperu, 1980. 53 p.
SUBJECT: Mini-Hydroelectric power preinvestment study Feasibility study for a small hydro power station with two generating units of 320 kW each, in a mountain village of Peru. A models for /energy demand/ evaluation. Associated irrigation scheme 0023

TITLE: CENTRALIZED SYSTEM OF MINI HYDRO PROJECTS PLANNING AND IMPLEMENTATION IN PENINSULAR MALAYSIA
AUTHOR: Nasaruddin, Hoesni
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 6 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/8
SUBJECT: Mini hydroelectric power development in Malaysia - (1) general approach; planning; design and approval; contracts (2) supervision of construction and project implementation; installation and commissioning (3) operation of electric power station; maintenance and repair; monitoring system 0024

TITLE: CENTRALIZED VERSUS DECENTRALIZED SYSTEM OF PROJECT PLANNING AND IMPLEMENTATION OF MINI-HYDRO POWER DEVELOPMENT. THE INDONESIAN CASE.
AUTHOR: Notodipuro, Hartoyo
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. ii, 9 p. tables.,
DOCUMENT NO.: UNIDO-ID/WG.403/5
SUBJECT: Small hydroelectric power projects in Indonesia, with reference to decentralization - (1) mini-hydro power (MHP) development; relevant planning and project design (2) achievements; problems faced in project implementation (3) aspects of centralization as against a decentralized system; advantages and disadvantages. Statistics, list of existing MHP stations 0025

TITLE: Chicopee Hydroelectric Project. Feasibility Assessment
CORPORATE NAME: RAYTHEON COMPANY.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 87 p.
DOCUMENT NO.: NTIS:DOE/ID/01784-1
SUBJECT: Proposes a mini hydroelectric power generating facility controlling a 714 square mile drainage area and utilizing Chicopee Falls Dam with 16 feet of gross head and 10 additional feet, 580 feet downstream. Study includes costs estimates and economic aspects, engineering, and environmental aspects. Preinvestment study 0026

TITLE: CHINA. GROUP STUDY TOUR IN THE FIELD OF MEDIUM AND SMALL SCALE HYDRO POWER PLANTS.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 44 p.,
DOCUMENT NO.: UNIDO-UNIDO/IO.467
SUBJECT: Report of a tour of medium and small hydroelectric power plants in China - (1) stations visited (average installed capacity: 200-400 kw) (2) turbines, irrigation. 0027

TITLE: China opts for small scale energy techniques
AUTHOR: Smil, V.
SOURCE:
SERIES: Energy international (San Francisco, CA, USA) February 1976, v. 13, pp. 17 (2)
SUBJECT: Mini-Hydroelectric power
China's local energy supply programs, including mnicro-hydrology, have application for other developing nations. Advantages include plentiful and cheap labour, maximum use of local resources and materials, capital savings, and easy penetration of rural areas 0028

TITLE: CHINA'S SMALL HYDROELECTRIC MACHINERIES.
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO
MINISTRY OF WATER CONSERVANCY, CHINA.
SOURCE: Vienna, 1981. 9 p. tables.,
DOCUMENT NO.: UNIDO-ID/WG.329/25
SUBJECT: Production of turbines and /generators/ for small hydroelectric power units in China - (1) water resources; number of small power stations in operation; continued development potential (2) special features of equipment manufactured (3) typical applications; manufacturers. Annexes classification of turbines, generators and governors 0029

TITLE: CHINESE EXPERIENCES IN SMALL MINI-HYDRO-POWER GENERATION.
AUTHOR: RUIZHANG G
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 160 p. tables, graphs, diagrams, ill,
DOCUMENT NO.: UNIDO-UNIDO/IS.284
SUBJECT: Mini-hydroelectric power generation in China - (1) hydro-power resources; river development and construction of MHGs; social aspects, economic aspects, planning, implementation and operation of MHGs (2) policies; economic aspects; comparison with other energy sources (3) /design/; /hydrology/ (4) turbines, /generators/ and equipment (5) research, choice of technology, pre-stressed concrete pipes, valves; training; costs reduction; /dam/s 0030

TITLE: Civil works design, operation and maintenance for small hydro power facilities
AUTHOR: Cassidy, John J.
CONFERENCE: Small Hydroelectric PowerPlants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 168-185
SUBJECT: Civil engineering for mini-hydroelectric power; /design/, operation, and maintenance and repair 0031

TITLE: Cloudburst - a handbook of rural skills and technology
AUTHOR: Marks, V.
SOURCE: Seattle, WA, USA, Madrona Publishers, 1977. 128 p.
SUBJECT: Mini-Hydroelectric power
Devotes 40 pages to /water wheels/, including a 1947 Popular Science reprint entitled "Harnessing the Small Stream" 0032

TITLE: COMMENTS REGARDING THE ESTABLISHMENT OF A NETWORK SYSTEM AND A REGIONAL CENTRE FOR MINI AND SMALL HYDROPOWER, FOR THE ESCAP COUNTRIES, TAKING INTO CONSIDERATION THE EXPERIENCES OF LATIN AMERICA.
AUTHOR: Indacochea, Enrique
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 39 p. diagrams.,
DOCUMENT NO.: UNIDO-ID/WG.376/3
SUBJECT: Establishment of a network system and a regional centre for small hydroelectric power generation in Asia, based on experience in Latin America - (1) Latin American energy co-operative programmes (PLACE, OLADE) (2) concept, scope, activities and organizational aspects of a regional network system and its application in member countries (3) management and operation of the regional centre: research, training centre ; manufacture of equipment; information exchange 0033

TITLE: Commercialization strategy report for small-scale hydroelectric power
AUTHOR: McDonald, R
Smith, F.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 27 p.
DOCUMENT NO.: NTIS:TID 28841 (Dr)
SUBJECT: Mini-Hydroelectric power
Installing electric-generating facilities at /existing facilities/ (non-hydropower /dam/s) in the USA: using either conventional turbines /power house/s, or /low head/ applications. Part II discusses technical, market, economic, environmental, and institutional readiness, and anticipated benefits 0034

TITLE: Community load determination, survey and system planning
AUTHOR: Armstrong-Evans, R.J.
Holland, Ray
Marshall, K.
CONFERENCE: Small Hydroelectric Powerplants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 59-76
SUBJECT: Mini-Hydroelectric power project planning
0035

TITLE: Computer model for evaluation of small scale hydroelectric projects in Latin America
AUTHOR: Calderon, Gustavo
Hough, Thomas C.
Limaye, Dilip R.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June 1981
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE: Diagrams
SERIES: Proceedings, v. 2, pp. 1143-53
SUBJECT: Mini-Hydroelectric power
A /computer economic model/ design prepared by Synergic Resources Corporation to aid in evaluation of potential sites in Latin America
0036

TITLE: COMPUTER OPTIMIZATION OF HYDRO-POWER STATION DESIGN AND RELIABILITY BY DYNAMIC SIMULATION
AUTHOR: Susa Cordero, Rodolfo
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 20 p. graphs.,
DOCUMENT NO.: UNIDO-ID/WG.403/1
SUBJECT: Improved hydroelectric power station design in Mexico, with reference to computer optimization - (1) need for optimizing design and reliability of hydro-electric power stations; computer programmes developed by an electric power research centre (2) programme model and field experience (3) computer simulation (4) computer output examples 0037

TITLE: Conservation and renewable resource directory
CORPORATE NAME: US DEPT. OF ENERGY.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 86 p.
DOCUMENT NO.: DOE/IR-0040
SUBJECT: Mini-Hydroelectric power
Directory of Department of Energy offices responsible for conservation and renewable energy activities 0038

TITLE: CONSIDERATION ON THE CREATION OF A REGIONAL NETWORK SYSTEM ON SHG AND PRIORITY TASKS OF THE HANGZHOU CENTRE IN 1982-1984.
AUTHOR: Xiaozhang, Zu
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 8 p.,
DOCUMENT NO.: UNIDO-ID/WG.376/10
SUBJECT: Proposed Asian co-operation regarding small-scale hydroelectric power generation and the centre in China - (1) planning for regional cooperation through a "network system" with the Centre in Hangzhou as focal point (2) priority tasks: technical training, information services; pilot project on automation; research, study tour, consulting 0039

TITLE: Construction of mill dams
AUTHOR: Leffel, J.
SOURCE: Springfield, OH, USA, 1972.
SERIES: History of technology series, v. 1,
SUBJECT: Mini-Hydroelectric power: /dam/ construction 0040

TITLE: Cost of controls for small hydroelectric plants or river systems
AUTHOR: Frick, P.A.
Alexander, G.C.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 142 p.
DOCUMENT NO.: NTIS:DOE/ET/28310-1
SUBJECT: Mini-Hydroelectric power
Analyses /Kaplan turbines/, or propellor type turbines, and various /flow control/ methods. /Microcomputers/ are suggested where very tight control is required. Fully automated /on site control/ is compared with /remote control/. Authors believe that hydrolic servomotors cannot be economically or reliably replaced as wicket-/gates/ and propellor-blade-angle controllers, even in small turbines 0041

TITLE: COST REDUCTION CONSIDERATIONS IN SMALL HYDROPOWER DEVELOPMENT
AUTHOR: Delisser, Richard A.
Minott, Dennis A.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 12 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/21
SUBJECT: Cost reduction in development of mini hydroelectric power generation (MHG) - (1) general concepts: physical components of MHG facilities; site assessments, /hydrology/, engineering design, social and economic aspects, detailed civil engineering, tendering, construction, etc. (2) ways of reducing capital costs in developing countries: penstocks, speed control, turbines and reverse pumps, voltage control devices, standardization of parts and reduction of equipment variety (3) other cost reduction considerations 0042

TITLE: Cottage multi-purpose power unit for rural areas in Nepal
AUTHOR: Nakarmi, A.M.
SOURCE: Kathmandu, Nepal, Small Hydel Development Board, 1980.
SUBJECT: Mini-Hydroelectric power 0043

TITLE: COUNTRY EXPERIENCES IN MINI-HYDROELECTRIC GENERATION FOR ETHIOPIA.
AUTHOR: MESSELE S
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 10 P. TABLES.,
DOCUMENT NO.: UNIDO-ID/WG.305/32
SUBJECT: DEVELOPMENT OF SMALL HYDROELECTRIC POWER GENERATION IN ETHIOPIA - ELECTRIC POWER SUPPLY TO URBAN AND RURAL AREAS; RIVER RESOURCES; SITES FOR /DAM/S AND SMALL POWER STATIONS; GROWTH OF /ENERGY DEMAND/, RURAL DEVELOPMENT POLICY. STATISTICS ON INSTALLED AND REQUIRED KW CAPACITIES 0044

TITLE: COUNTRY PAPER OF IRAN. (HYDROELECTRIC POWER).
AUTHOR: TOLOU A
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 3 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/19
SUBJECT: POTENTIAL FOR HYDROELECTRIC POWER IN IRAN - /ENERGY DEMAND/ IN RURAL AREAS; POSSIBLE ROLE OF SMALL HYDROELECTRIC STATIONS IN MOUNTAINOUS REGIONS; WATER SUPPLY, THE SUBTERRANEAN "QANATS", ETC. 0045

TITLE: COUNTRY PAPER - PAKISTAN. (SMALL HYDROELECTRIC POWER GENERATION).
AUTHOR: Asif Ali Sheikh
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 9 p.,
DOCUMENT NO.: UNIDO-ID/WG.376/4
SUBJECT: Development of small hydroelectric power generation (SHG), with experience of Pakistan - (1) SHG as a desirable energy source; economic aspects (2) installation of 40 micro-units since 1975 (3) technological change (4) concept of a Regional Network System for Asia (5) needs for research, training 0046

TITLE: Design criteria of typical civil works for mini hydropower
AUTHOR: Mata La Cruz, Juan
CONFERENCE: Small Hydroelectric Powerplants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 145-155
SUBJECT: Civil engineering /design/ for mini-hydroelectric power 0047

TITLE: Design manual for water wheels
AUTHOR: Ovens, W.G.
SOURCE: Arlington, VA, USA, VITA, 1975. 71 p.
SUBJECT: Mini-Hydroelectric power
Outlines selection, design, and application of /water wheels/ based on specific needs.
Water wheel reference list 0048

TITLE: Design of small water turbines for farms and small communities
AUTHOR: Durali, Mohammad
SOURCE: Cambridge, MA, USA, Massachusetts Institute of Technology, Technology Adaptation Program, 1976. Includes diagrams
SUBJECT: Mini-Hydroelectric power
Four types of water turbines producing 5 kW from a head of 10 m were studied: cross-flow /Banki turbines/; two types of /axial flow turbines/; and /radial-flow turbines/. One of the axial-flow turbines (with rotor blades having 50 % degree of reaction) was chosen for detailed design as presenting the optimum combination of simplicity and efficiency 0049

TITLE: Determining feasibility of small-scale hydropower
AUTHOR: Willer, David C.
SOURCE:
SERIES: ASCE journal, energy division, December 1981, v. 107, no. 2, pp. 209-217
SUBJECT: Mini-Hydroelectric power preinvestment study
Procedures for testing sensitivity of economic aspects in feasibility studies: physical features; cost of plant; costs of connection to transmission grid; interest rates; value of generation from alternative energy sources. (Economic aspects) 0050

TITLE: Developing hydro power in low-head reservoirs
AUTHOR: Furlong, John N.
CONFERENCE: ASCE Conservation and Utilization of Water and Energy Resources Symposium, San Francisco, CA, USA, 8-11 August 1979
SOURCE:
SERIES: Proceedings, pp. 334-43
SUBJECT: Mini-Hydroelectric power preinvestment study Feasibility study at /low head/ /reservoir/ in the Trinity River, Texas. Water resources and costs estimated to 2015. Environmental, institutional and social aspects for various plant sizes and unit types. Methodology of the study 0051

TITLE: Developing small hydroelectric dam potential
AUTHOR: Lyon-Allen, M.
SOURCE: Washington, DC, USA, Community Services Administration, 1979. 19 p.
DOCUMENT NO.: NTIS:PB-296 238/9ST
SUBJECT: Mini-Hydroelectric power: preinvestment study Potential of small hydro development: how communities may begin process of feasibility assessment 0052

TITLE: DEVELOPMENT AND APPLICATION OF MINI-HYDROELECTRIC GENERATING UNITS IN THE DEVELOPING COUNTRIES: INDIA.
AUTHOR: BEHL PK
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 19 P. TABLES, DIAGRAM.,
DOCUMENT NO.: UNIDO-ID/WG.305/46
SUBJECT: SMALL HYDROELECTRIC POWER UNITS IN INDIA - (1) PRESENT STATUS OF MINI-MICRO HYDRO STATIONS; DEVELOPMENT POTENTIAL (2) RESEARCH AND DEVELOPMENT (3) EXPERIENCE WITH REGARD TO CIVIL ENGINEERING, COSTS, INSTALLED CAPACITIES, OPERATION, MAINTENANCE AND REPAIR, SOCIAL ASPECTS AND ECONOMIC ASPECTS 0053

TITLE: DEVELOPMENT AND APPLICATION OF SMALL HYDROELECTRIC POWER PLANTS.
AUTHOR: DEWAN S
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 42 P. TABLE, GRAPH, DIAGRAMS.,
DOCUMENT NO.: UNIDO-ID/WG.305/8
SUBJECT: SMALL-SCALE HYDROELECTRIC POWER PLANTS - OPERATIONAL HYDROELECTRIC POWER STATIONS IN VARIOUS COUNTRIES; NEED FOR PLANTS UP TO 1000 KW CAPACITY; ADVANTAGES; PLANNING AND LAYOUT OF STATIONS; ENGINEERING /DESIGN/; APPLICATION, DESCRIPTION AND FUNCTIONS OF MAJOR EQUIPMENT (TURBINES, /GENERATORS/, /CONTROL MECHANISMS/, TRANSFORMERS, CABLES); SYSTEMATIC APPROACH AND PROBLEMS OF OPTIMAL POWER PLANT CONTROL; TENDERS FOR PLANTS, QUESTIONNAIRE, DESIGN CRITERIA; SMALL HYDROELECTRIC OR DIESEL ENGINES POWER STATIONS; CHOICE OF TECHNOLOGY 0054

TITLE: Development concept for Kaplan turbines
AUTHOR: Hartmann, Otto
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, pp. 99-108
SUBJECT: Mini-Hydroelectric power
Development of /bulb turbines/, /tube turbines/, and /axial flow turbines/ from classical vertical-shaft /Kaplan turbines/. A modified through-flow arrangement proposed to minimize concrete volume and simplify design. Mechanical and hydraulic advantages over other turbine designs 0055

TITLE: DEVELOPMENT IN MINI-HYDRO POWER GENERATION IN THE REPUBLIC OF ZAMBIA.
AUTHOR: Chanda, J. Kalolo
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 6 p.,
DOCUMENT NO.: UNIDO-ID/WG.329/21
SUBJECT: Mini-hydroelectric power generation in Zambia - (1) present status as main source of electricity; details of four major units serving rural areas; planning, technical assistance needs; development potential (2) technical and economic aspects; engineering data (3) administrative aspects; supply of equipment; training (4) MHG experience in Finland 0056

TITLE: Development of equipment for harnessing hydro power on a small scale
AUTHOR: Meier, Ueli
CONFERENCE: Workshop on Mini/Micro Hydroelectric Plants, Kathmandu, Nepal, November 1978
SOURCE: Arbon, Switzerland, Swiss Association for Technical Assistance, 1978. 20 p., illustrations
SUBJECT: Mini-Hydroelectric power /Design/ of turbines of various capacities and for various applications in Nepal. Local manufacture and installation of mini-hydro equipment 0057

TITLE: DEVELOPMENT OF EQUIPMENT OF HARNESSING HYDROPOWER ON A SMALL SCALE.
AUTHOR: MEIER U
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 16 P. DIAGRAMS.,
DOCUMENT NO.: UNIDO-ID/WG.305/43
SUBJECT: DEVELOPMENT OF TURBINES AND /GENERATORS/ FOR SMALL HYDROELECTRIC POWER GENERATION UNITS IN NEPAL - (1) /WATER WHEELS/, SMALL PROPELLER TURBINES, DEVELOPMENT AND /DESIGN/ OF MORE APPROPRIATE TURBINES (2) APPLICATION IN RURAL AREAS (3) COSTS OF TURBINES AND SMALL ELECTRIC POWER STATIONS (4) /SPEED CONTROL/ AND PLANT SAFETY: (a) /FLOW CONTROL/ (b) ELECTRONIC /LOAD CONTROL/ (c) /DAMAGE PREVENTION/ DEVICES 0058

TITLE: Development of industrial owned, small hydroelectric facilities
AUTHOR: Krikorian, J.S. Jr.
CONFERENCE: Annual University of Missouri-Rolla Dept. of Natural Resources Conference on Energy, 4th, Rolla, Mo., October 1977
SOURCE: Rolla, MO, USA, University of Missouri-Rolla, 1978.
SERIES: Proceedings, pp. 451-460
SUBJECT: A methodology with case study and /computer economic model/ for determining the economic feasibility of /renovation/ of industrial owned, small hydroelectric facilities
Small-scale Hydroelectric power 0059

TITLE: DEVELOPMENT OF MINI AND MICRO-HYDROELECTRIC POWER STATIONS IN PAKISTAN.
AUTHOR: ASAD ASGHAR ALI
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 9 P. TABLES.,
DOCUMENT NO.: UNIDO-ID/WG.305/33
SUBJECT: DEVELOPMENT OF SMALL HYDROELECTRIC POWER GENERATION IN PAKISTAN - DEVELOPMENT POTENTIAL FOR MINI-HYDROELECTRIC STATIONS IN MOUNTAINOUS REGIONS ON SMALL RIVERS; SOCIAL ASPECTS AND ECONOMIC ASPECTS; STUDIES OF POWER POTENTIAL; UNITS IN OPERATION, INSTALLED AND POTENTIAL CAPACITY; UNITS LATELY COMPLETED AND UNDER CONSTRUCTION; LOCAL INPUTS IN PROJECT IMPLEMENTATION; CHOICE OF TECHNOLOGY, TURBINES AND /GENERATORS/; POWER STATIONS ON /CANAL/S 0060

TITLE: DEVELOPMENT OF MINI/MICRO-HYDROPLANTS IN THAILAND.
AUTHOR: Premmani, Prapath
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 17 P. TABLE.,
DOCUMENT NO.: UNIDO-ID/WG.305/16
SUBJECT: DEVELOPMENT OF SMALL HYDROELECTRIC POWER PLANTS IN THAILAND - (1) MINI-MICRO HYDRO POTENTIAL AND PRESENT POSITION (2) PLANTS UNDER OPERATION, UNDER CONSTRUCTION, PLANNED (3) DEVELOPMENT TREND: PROJECT COSTS REDUCTION; ENGINEERING /DESIGN/; SELECTION OF HEAD AND TURBINE (4) RESEARCH AND DEVELOPMENT OF TURBINES, GIVING SPECIFICATIONS OF /CROSS FLOW TURBINES/ 0061

TITLE: Development of small hydroelectric projects in Appalachia
AUTHOR: Warren, J.L.
SOURCE: Raleigh, NC, USA, North Carolina State Dept. of Administration, 1979. 182 p.
DOCUMENT NO.: NTIS:PB80-170806
SUBJECT: Mini-Hydroelectric power preinvestment study Three small hydroelectric sites to be analysed for suitablilty and cost-effectiveness of projected construction 0062

TITLE: DEVELOPMENT OF SMALL HYDRO-POWER IN ZAMBIA.
AUTHOR: Chanda, J. Kalolo
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA. KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 10 p. tables.,
DOCUMENT NO.: UNIDO-ID/WG.403/16
SUBJECT: Small hydroelectric power development in Zambia - (1) the electric power supply; rivers (2) the relevant institutional framework (3) methodology for site feasibility studies (4) techniques for determining limits of costs reduction; compatible viability and utility (5) centralization and decentralization (6) efforts to plan domestic production of equipment 0063

TITLE: Digital control of a hydroelectric power plant
AUTHOR: Bjork, D.R.
Marcotte, K.E.
Snrauger, N.K.
Starr, D.C. Wilkins, A.J.
SOURCE: Missoula, MT, USA, Montana State University, 1974.
SUBJECT: Mini-Hydroelectric power
Computer based automatic control of a small older plant. Personnel training in required techniques. Instrumentation and software 0064

TITLE: Discovering watermills
AUTHOR: Vince, J.N.T.
SOURCE: Aylesbury, UK, Shire Publications, Ltd., 1970. 56 p.
SUBJECT: Mini-Hydroelectric power 0065

TITLE: Diseno y estandarizacion de turbinas michell-banki
AUTHOR: Hernandez, C.
CONFERENCE: Latin American Seminar on Small Hydro Power Stations, 1st, Girardot, Colombia, November 1980
SOURCE: Quito, Ecuador, OLADE, 1980. 9 p.
SERIES: Boletin energetico no. 16
SUBJECT: Mini-Hydroelectric power
/Design/ fundamentals and standardization proposal for Michell-/Banki turbines/. Outlines design of /injectors/, and gives procedure for establishing main features of /runners/. Schedule for standardization 0066

TITLE: Distribution considerations for mini/micro-hydro projects
AUTHOR: Jackson, Bard
Evans, Leon
CONFERENCE: Small Hydroelectric Powerplants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 214-232
SUBJECT: Mini-Hydroelectric power distribution considerations 0067

TITLE: DOE small hydropower program
AUTHOR: Hickman, W.W.
McLaughlin, T.B.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1980. 8 p.
DOCUMENT NO.: NTIS:DOE/RA/04934-15
SUBJECT: Mini-Hydroelectric power
Department of Energy's National Small Hydropower Program. Pilot projects, engineering development, and loan subprograms 0068

TITLE: Do-it-yourself, axial-flow, low-head turbine
AUTHOR: Meinikheim, F.
SOURCE:
SERIES: Alternative sources of energy (A.S.E.) (Milaca, MN, USA), October 1977, no. 28
SUBJECT: Mini-Hydroelectric power turbines 0069

TITLE: Down river and into the gap
AUTHOR: Parvin, B.
SOURCE:
SERIES: New Zealand energy journal, 25 January 1976, v. 49, no. 1, pp. 11 (3)
SUBJECT: Mini-Hydroelectric power
Potential for small hydro plants in New Zealand in face of financial problems and environmental opposition 0070

TITLE: DRAFT NOTE FOR DISCUSSION. (HYDROELECTRIC POWER GENERATION).
AUTHOR: Fernando, P.N.
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 5 p.,
DOCUMENT NO.: UNIDO-ID/WG.376/8
SUBJECT: Proposal for a network system promoting small-scale hydroelectric power (MHG) in Asia ands the Pacific - (1) technical and economic aspects; financing; operation, maintenance and repair (2) research needs (3) training for technical personnel (4) management and operation of proposed centre in Hangzhou, China 0071

TITLE: DRAFT REPORT. (MEETING ON CREATION OF A REGIONAL NETWORK SYSTEM IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, ESCAP REGION).
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 58 p.,
DOCUMENT NO.: UNIDO-ID/WG.376/13 UNIDO-ID/WG.376/13/Add.1
SUBJECT: Report of a meeting on proposed Asian and Pacific regional cooperation in small hydroelectric power generation (SHG) - (1) objectives and organizational aspects of a proposed Regional Network System for SHG (2) work programme of a regional centre for research and training, to be located in Hangzhou, China (3) summary of country papers: Bangladesh, China, Fiji, India, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka and Thailand 0072

TITLE: DRAFT WORK PROGRAMME (1983/1984) OF ESCAP REGIONAL NETWORK SYSTEM FOR SMALL HYDROPOWER DURING THE INTERIM PERIOD.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 10 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/32
SUBJECT: Work programme for Asia and the Pacific in the field of small hydroelectric power generation - (1) background, objectives and organizational aspects of a regional network with national focal points (2) draft work programme: information services; research; training; advisory service and consulting. Schedule of activities for 1983-1984 0073

TITLE: Drawings of a small water turbine
CORPORATE NAME: DEUTSCHE STIFTUNG FUER INTERNATIONALE ENTWICKLUNG.
SOURCE: Eschborn, FR Germany, German Appropriate Technology Exchange, 1979.
SUBJECT: Mini-Hydroelectric power
Complete set of drawings for building and installing 11 kW /crossflow turbines/ that can be constructed in a small workshop. Hand regulation of water flow (/flow control/) 0074

TITLE: EARTH DAM PROJECTS IN SMALL HYDRO-POWER CONSTRUCTION IN HUBEI PROVINCE.
AUTHOR: CHEN YENLU
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 20 p. tables, diagrams.,
DOCUMENT NO.: UNIDO-ID/WG.329/30
SUBJECT: /Earth dam/ projects in small hydroelectric power construction in China - (1) topography and /energy demand/ in Hubei province (2) varieties of dam types and selection of soil for building (3) basic principles for dam civil engineering /design/ and stability analysis (4) foundation treatment and seepage control (5) pressure conduits under the earth dam, clay pipes. Diagrams, tables 0075

TITLE: Earth, wind, sun and water: the energy alternatives
AUTHOR: Thekaekara, M.P. (ed.)
SOURCE: Mt. Prospect, IL, USA, Institute of Environmental Sciences, n.d.. 103 p.
SUBJECT: Mini-Hydroelectric power 0076

TITLE: Economic and financial feasibility study methodologies
AUTHOR: Auslam, David C., Jr.
Henwood, Mark I.
CONFERENCE: Small Hydroelectric Powerplants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 101-115
SUBJECT: Mini-Hydroelectric power preinvestment studys 0077

TITLE: ECONOMIC APPRAISAL OF SMALL-SCALE HYDRO POWER PROJECTS.
AUTHOR: Goldsmith, K.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 13 p. tables.,
DOCUMENT NO.: UNIDO-ID/WG.403/29
SUBJECT: Economic project evaluation for small-scale hydroelectric power generation projects - (1) preconditions for considering such projects (2) methods of economic appraisal: cost benefit analysis; comparison of present worth of cash flow; internal rate of investment returns; comparison of production costs (3) case study of an economic analysis with reference to a project in Thailand 0078

TITLE: Economic development of small hydro
AUTHOR: Newman, C.A.
SOURCE:
SERIES: Electric forum, 1979, v. 5, no. 2, pp. 22 (3)
SUBJECT: Mini-Hydroelectric power
/Renovation/ of abandoned hydro power sites: uprating and modernizing presently operating systems; modifying related hydroelectric equipment to improve hydro generating potential 0079

TITLE: Economic evaluation of micro-hydro projects in hill area
AUTHOR: Kumar, L.V.
SOURCE:
SERIES: Indian journal of power and river valley development, 1978, pp. 1976-1979
SUBJECT: Mini-Hydroelectric power preinvestment study: economic aspects 0080

TITLE: Economic feasibility assessment for reclamation of industrial owned, small hydroelectric facilities
AUTHOR: Krikorian, John S.
SOURCE: New York, NY, USA, IEEE, 1977. 7 p.
DOCUMENT NO.: Pap A 77 033-4
SUBJECT: Mini-Hydroelectric power - /renovation/ of existing facilities
/Computer economic model/ing to cope with diverse inputs at different sites. Model can be used for maximizing economic feasibility. Sensitivity analyses can be performed 0081

TITLE: Economic, mechanical and electrical aspects of small hydro schemes
AUTHOR: Leyland, Bryan
McMahon, Rob J.
SOURCE:
DOCUMENT NO.: ISSN 0028-808X
SERIES: New Zealand engineering, 15 February 1979, v. 34, no. 2, pp.30-35
SUBJECT: Mini-Hydroelectric power
Economic aspects and operational guidelines for development of local authority schemes. Mechanical and electrical /design/ of hydro schemes with flows and outputs of individual machines 0082

TITLE: Economics and sociology of alternative energy sources
AUTHOR: Makhijani, A.
CONFERENCE: ESCAP/UNEP Environment and Development: Regional Seminar on Alternative Patterns of Development and Life-styles in Asia and the Pacific, Bangkok, Thailand, 14-18 August 1979
SOURCE: 53 p.
SUBJECT: Mini-Hydroelectric power
Energy sources and needs for agriculture, home, and transportation in the region. Social aspects, economic aspects and ecological aspects of alternatives such as earthen pot irrigation, biogas plants, fuelwood plantations, solar energy, and small-scale hydroelectricity. Integrated approach to energy development 0083

TITLE: Economics of low head hydropower
AUTHOR: Mayo, Howard A.
CONFERENCE: Hydropower and Transmission 8th Environmental Conference, Lake Champlain, NY, USA, 9-10 June 1981
CORPORATE NAME: LAKE CHAMPLAIN AD HOC COMMITTEE.
SOURCE:
SERIES: Proceedings, pp. 261-75
SUBJECT: Mini-Hydroelectric power
Economic aspects of: acquisition, preconstruction, construction, operation, and income. Also risk elements and financing concerns, such as power purchase agreements, and land and water rights 0084

TITLE: Economics of small hydro projects in Southeast Asian environment
AUTHOR: Hutchinson, H.A.
CONFERENCE: Conference on Electric Power Supply Industry, 4th, Bangkok, Thailand, 22-26 November 1982.
SOURCE:
SERIES: Proceedings, no. 2, pp. 2 ff
SUBJECT: Economic aspects of mini-Hydroelectric power 0085

TITLE: El desarrollo de pequenas centrales hydroelectricas en LatinoAmerica y el Caribe
AUTHOR: Indacochea, E., et.al.
CONFERENCE: First Latin American Seminar on Small Hydro Power Stations, November, 1980, Girardot, Colombia
SOURCE: Quito, Ecuador, OLADE, 1980. 57 p.
SUBJECT: Mini-Hydroelectric power planning
Advantages and limitations to small hydro power stations as alternative energy source in Latin America. These defined as having installed capacities up to 500 kW. Development strategy for the region, and its energy organization OLADE 0086

TITLE: Electric power from small streams
CORPORATE NAME: TECHNICAL SERVICE BUREAU.
SOURCE: Arlington, VA, USA, VITA, n.d..
SUBJECT: Mini-Hydroelectric power 0087

TITLE: Electrificacion rural
CORPORATE NAME: INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT.
SOURCE: Washington, DC, USA, World Bank, 1976. 101 p.
SUBJECT: Mini-Hydroelectric power
Analyses, in context of rural electrification, economic aspects: investment possibilities; methods of project design, financing projects, and technical and institutional problems; policies and procedures of the World Bank 0088

TITLE: Electrificacion rural y el proyecto microcentrales hidroelectricas
AUTHOR: Indacochea, E.
SOURCE: Lima, Peru, Itentec, 1978. 9 p., diagrams
SUBJECT: Mini-Hydroelectric power
Planning considerations for rural electrification through small hydro power stations in Peru 0089

TITLE: Electrification of rural areas based on small scale hydro-electric plants
AUTHOR: Vinjar, Asbjoern G.
CONFERENCE: World Energy Conference, 11th, Munich, Germany, 8-12 September 1980
SOURCE:
SERIES: Transactions, v. 2, pp 576 ff
SUBJECT: Eexperience in Norway of rural electrification with small scale hydroelectric power, as model for developing countries. Social aspects. Small scale water power technology transfer between countries. Development strategies 0090

TITLE: Energy, environment and building
AUTHOR: Steadman, P.
SOURCE: New York, NY, USA, Cambridge University Press, 1975.
SUBJECT: Mini-Hydroelectric power
Chapter 12, pp. 213-220, directory of small hydraulic /turbine manufacturers/, and small scale water power bibliography 0091

TITLE: Energy for rural and island communities
CONFERENCE: Energy for Rural and Island Communities Conference, Inverness, UK. 22-24 September 1980
CORPORATE NAME: STRATHCLYDE UNIVERSITY.
SOURCE: Pergamon, 1980. 253 p.
SUBJECT: Mini-Hydroelectric power
Development and planning of a system to meet the renewable and low -intensity energy needs of rural and island communities. Case studys examining each type of energy, including hydro-electric generation 0092

TITLE: Energy for rural development: renewable resources and alternative technologies for developing countries
CORPORATE NAME: NATIONAL RESEARCH COUNCIL.
SOURCE: Washington, DC, USA, National Academy of Sciences, 1976. 306 p.
SUBJECT: Mini-Hydroelectric power
Current and projected technologies for various energy sources including a chapter on hydropower. Appendix 1 lists organizations and institutions engaged in energy research with potential for small-scale application. Appendix 8 lists small-scale hydropower machinery (turbines, /generators/) with illustrations and specifications 0093

TITLE: Energy from waters
AUTHOR: Lilienthal, D.E.
SOURCE:
SERIES: New York Times, 28 December 1976, p. 27
SUBJECT: Mini-Hydroelectric power
Economic aspects of developing small water power for electrical energy. Underdeveloped water power could supply electricity for 40 million people in USA 0094

TITLE: Energy primer: solar, water, wind, and biofuels
AUTHOR: Merrill, R. (ed.)
Gage, T. (ed.)
SOURCE: Menlo Park, CA, USA, Portola Institute, 1975.
SUBJECT: Mini-Hydroelectric power
Outlines methodology for assessing stream potential and harnessing it by a variety of systems from /dam/s and /water wheels/ to sluices and turbines. Tables and diagrams. Bibliography of water power related literature 0095

TITLE: Energy recovery by mini-hydroelectric projects
AUTHOR: Hoffman, P.R.
Horowitz, G.F.
CONFERENCE: Tackling the Crisis. Greater Los Angeles Area Energy Symposium, 19 May 1976
SOURCE: North Hollywood, CA, USA, West Period,
SERIES: Proceedings Los Angeles Council of Engineering and Science, v. 2, pp. 219-229
SUBJECT: Mini-Hydroelectric power
How energy now being wasted in pressure regulating stations of /water supply pipelines/ can be recovered by adding small hydroelectric units at /existing facilities/ (head breaking facilities). Economic aspects, and environmental benefits of such units 0096

TITLE: Energy resources in Kenya and their environmental impacts
AUTHOR: Marquand, C.J.
Githinji, P.M.
CONFERENCE: UNEP (et al) Energy and Environment in East Africa Conference, Nairobi, Kenya, 7-10 May 1979
SOURCE:
SERIES: Proceedings, pp. 159-78
SUBJECT: Mini-Hydroelectric power
Environmental impacts associated with various primary sources of energy in Kenya, among them small-scale hydropower 0097

TITLE: Engineer's Role in Hydropower Development
CONFERENCE: Small Scale Hydropower Resource Development Management Workshop. Denver Research Institute, University of Denver, CO, USA, 18 October 1983
CORPORATE NAME: Stone & Webster Engineering Corporation.
SOURCE: Boston, MASS, USA, 1982.
SUBJECT: Mini-Hydroelectric power
International development of small-scale hydropower resources including experience in the hydroelectric field, training, management concepts, testing and start-up assistance 0098

TITLE: Environment assessment of small scale hydropower
AUTHOR: Zoellner, David
CONFERENCE: Small Hydroelectric Powerplants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 77-100
SUBJECT: Environmental studies for mini-hydroelectric power develoment 0099

TITLE: Environmental impact assessment methodology of small-scale hydroelectric projects
AUTHOR: Carlisle, Richard K.
Lystra, Donald W.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979.
SERIES: Proceedings, pp. 492-98
SUBJECT: Mini-Hydroelectric power
Feasibility study on /recommissioning/ two small-scale hydroelectric facilities in Michigan. Environmental and physical assessments. /Fish passage/. /Flood control/ 0100

TITLE: Environmental issues and site selection criteria for small hydropower projects in developing countries
AUTHOR: Cada, G.F.
Zadroga, F.
SOURCE: Oak Ridge, TN, USA, Oak Ridge National Laboratory, 1981. 55 p.
DOCUMENT NO.: ORNL/TM-7620
SUBJECT: Mini-Hydroelectric power
Fundamental environmental issues that should be addressed in a preinvestment study. Checklist of environmental data to judge the significance of projected impacts. Necessary training and capabilities of personnel studying /site selection/. General procedures for conducting such studies 0101

TITLE: Environmental issues and small-scale hydroelectric development
AUTHOR: Hildebrand, S.G.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 15 p.
DOCUMENT NO.: NTIS:CONF-790970-1
SUBJECT: Mini-Hydroelectric power
Four potential difficulties are discussed: upstream flow and downstream /fish passage/ around dams; water level fluctuation and in stream flow alterations, water quality, and environmental effects of dredging 0102

TITLE: Environmental readiness document. Small scale low head hydro: commercialization phase III planning
CORPORATE NAME: US DEPT. OF ENERGY.
SOURCE: Washington, DC, USA, 1978. 32 p.
DOCUMENT NO.: NTIS:DOE/ERD-0009
SUBJECT: Mini-Hydroelectric power
Assessment of the environmental risks and potential impacts associated with the extensive use of small scale /low head/ hydro schemes 0103

TITLE: ESTABLISHMENT OF MINI/MICRO HYDEL PROJECTS.
AUTHOR: BEHL PK
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 20 P. TABLES, DIAGRAM.,
DOCUMENT NO.: UNIDO-ID/WG.305/11
SUBJECT: ESTABLISHING SMALL HYDROELECTRIC POWER PROJECTS, BASED ON EXPERIENCE IN INDIA - HIMALAYAN RANGES; PROJECTS IN BHUTAN AND AFGHANISTAN; RESEARCH AND DEVELOPMENT; /HYDROLOGY/ AND WATER MANAGEMENT; IRRIGATION /CANAL/ ELECTRIC POWER STATIONS; LESSONS DRAWN FROM PROJECT IMPLEMENTATION; CIVIL ENGINEERING, PRIOR INVESTIGATION (HYDROLOGY, TOPOGRAPHY, GEOLOGY), ECONOMIC ASPECTS, CAPACITY, MAINTENANCE AND REPAIR; SOCIAL ASPECTS, RURAL DEVELOPMENT 0104

TITLE: Estudio preliminar de pequenas de sarrollos hidroelectricos en la peninsula de Paria
AUTHOR: Fortoul, E.
SOURCE: Caracas, Venezuela, Compania Anonoma de Administracion y Fomento Electrico de Venezuela, 1979. 40 p.
SUBJECT: Mini-Hydroelectric power
Electrification of three village by means of three small hydro power stations: case study
0105

TITLE: Evaluacion de la demanda electricas
CORPORATE NAME: COOPERACION ENERGETICA PERUANO ALEMANA PARA LA PLANIFICACION INTEGRAL DE ENERGIA.
SOURCE: Lima, Peru, Ministerio de Energia y Minas, 1980. 15 p.
SUBJECT: Mini-Hydroelectric power
Evolution of /energy demand/ in Peru: methodology and study 0106

TITLE: Evaluating small hydro: selection of optimum plant size
AUTHOR: Bruton, Orval W.
Littelstadt, Richard L.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June 1981
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings. v. 2, pp. 963-78
SUBJECT: Mini-Hydroelectric power
Techniques in selecting plant size. Economic considerations, cost benefit analysis 0107

TITLE: Existing small dams may hold key to substantial increase in hydropower generation
CORPORATE NAME: US CORPS OF ENGINEERS.
SOURCE: Washington, DC, USA,
SERIES: Professional engineering, October 1977, v. 47, no. 10, pp. 19-22
SUBJECT: Mini-Hydroelectric power
Estimates megawatts to be gained by upgrading /existing facilities/: adding turbines and /generators/ at existing hydropower /dam/s, and constructing /power house/s at all existing non-hydropower dams in the United States 0108

TITLE: EXPLOITING MINI-HYDROPLANTS POTENTIAL FOR RURAL DEVELOPMENT IN TANZANIA.
AUTHOR: HASSANALI MG
REICHEL R
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 13 P. TABLE, DIAGRAM.,
DOCUMENT NO.: UNIDO-ID/WG.305/5
SUBJECT: DEVELOPMENT POTENTIAL FOR SMALL HYDROELECTRIC POWER PLANTS SERVING RURAL DEVELOPMENT IN TANZANIA - PRESENT LOCAL POWER SUPPLY TO A FEW UJAMAA VILLAGES (BASED ON DIESEL ENGINES); NEED FOR DEVELOPMENT OF ALTERNATIVE ENERGY SOURCES; LARGE POWER STATIONS ON MAJOR RIVERS; POWER FOR SCATTERED VILLAGES; PRESENT STATUS OF MINI-HYDROPLANTS; RECOMMENDATIONS AND CONCLUSIONS. BIBLIOGRAPHY
0109

TITLE: FACTORS AFFECTING THE FEASIBILITY OF SMALL SCALE WATER POWER PLANTS.
AUTHOR: Vinjar, Asbjoern G.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 34 p. tables, graphs.,
DOCUMENT NO.: UNIDO-ID/WG.403/22
SUBJECT: Factors affecting the feasibility of small hydroelectric power plants - (1) engineering and feasibility study for water based electric power station (2) costs estimate of projects (3) evaluation (4) capital costs versus consumers purchasing capacity (5) main factors affecting the feasibility (6) simplified planning of small scale water power projects
0110

TITLE: Factors hindering the development of small-scale municipal hydropower: a case study of the Black River project in Springfield, Vermont
AUTHOR: Peters, E.
Berger, G.
Amlin, J.
Meadows, D.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 92 p.
DOCUMENT NO.: DOE/RA/04895-1
SUBJECT: Mini-Hydroelectric power
Expediting licensing by federal and state agencies; governmental inter-agency coordination; project related information transfer
0111

TITLE: Farm scale hydro-electric power
AUTHOR: Martin G.
SOURCE:
SERIES: New Zealand energy journal (Aukland, New Zealand), December 1981, v. 54, no.12, pp. 4-6
SUBJECT: Mini-Hydroelectric power
Methods for utilizing water power on the farm to generate electricity. Applies generally to installations below 50 kW 0112

TITLE: Feasibility assessment of low-head hydroelectric development at the Peninsular Paper Company dam in Ypsilanti, Michigan. Final report
CORPORATE NAME: AYRES, LEWIS, NORRIS AND MAY, INC..
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 154 p.
DOCUMENT NO.: NTIS:DOE/ID/01766-1
SUBJECT: Mini-Hydroelectric power
Seven designs, including /vertical turbines/, /bulb turbines/, /crossflow turbines/, and /tube turbines/, were examined for development of a small, /low head/ /dam/ site 0113

TITLE: Feasibility determination of low-head hydroelectric power development at existing sites. Final report
AUTHOR: Polonsky, R.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 101 p.
DOCUMENT NO.: NTIS:DOE/ID/01759-1
SUBJECT: Mini-Hydroelectric power
Economic analysis including innovative plan for controlled environment agriculture in connection with /renovation/ of /dam/ in Bethlehem. Recommends 750-kW /Ossberger turbines/ to provide 4,014 000 kWh per year 0114

TITLE: Feasibility determination of low-head hydroelectric power development at existing sites: Mousam River project
CORPORATE NAME: FOSTER-MILLS ASSOCIATES.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 220 p.
DOCUMENT NO.: NTIS:DOE/ID/01777-1
SUBJECT: Mini-Hydroelectric power
Includes environmental, historical and archeological studies, geotechnical assessment of existing /dam/s, turbines alternatives, and economic analysis. 0115

TITLE: Feasibility of determination of low-head hydroelectric power development at existing sites. Big Blue River co-dependent hydroelectric development

CORPORATE NAME: NEBRASKA MUNICIPAL POWER POOL.

SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 179 p; appendixes 194 p.

DOCUMENT NO.: NTIS:DOE/ID/01774-1 NTIS:IDO-1774-T1

SUBJECT: Mini-Hydroelectric power: preinvestment study Seven installations with a capacity of 3,920 kW are proposed after consideration of technical and economic aspects; environmental, safety, and financial aspects. Appendixes include reports on civil engineering structures, generating facilities, geotechnical and equipment data, costs estimate summaries, and generational models 0116

TITLE: Feasibility of determination of low-head hydroelectric power development at existing sites: Brighton Dam hydroelectric development. Feasibility Report

CORPORATE NAME: WASHINGTON SUBURBAN SANITARY COMMMISSION.

SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 160 p.

DOCUMENT NO.: NTIS:DOE/ID/01787-1

SUBJECT: Mini-Hydroelectric power preinvestment study Asserts technical and financial feasibility of a 500 kW rated unit generating 2,840,000 kWh a year 0117

TITLE: Feasibility of using large vertical pumps as turbines for small-scale hydropower. Final technical report

AUTHOR: Cooper, P.
Worthen, R.

SOURCE: Washington, DC, USA, US Dept. of Energy, 1981. 229 p.

SUBJECT: Mini-Hydroelectric power preinvestment study The use of operating pumps as /pump turbines/ in small scale hydropower plants was found economically and technically feasible 0118

TITLE: Feasibility studies for small scale hydropower additions, a guide manual

CORPORATE NAME: HYDROLOGIC ENGINEERING CENTER
US ARMY CORPS OF ENGINEERS, INSTITUTE FOR WATER RESOURCES.

SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 6 v.

DOCUMENT NO.: NTIS:DOE/RA-0048

SUBJECT: Mini-Hydroelectric power
Technical data and procedural guidance for preinvestment studys to appraise potential of small hydropower additions to /existing facilities/. Technical guide. Economic and financial analysis. /Hydrology/ studies. Existing facility integrity. Electromechancial features. Civil engineering features. Glossary. References

0119

TITLE: Feasibility study for the addition of a hydroelectric unit at Max Starcke Park Dam for city of Seguin, Texas

CORPORATE NAME: BROWN AND ROOT, INC..

SOURCE: Washington, D.C., USA, US Dept. of Energy, 1978. 47 p.

DOCUMENT NO.: NTIS:DOE/ID/01776-1

SUBJECT: Mini-Hydroelectric power preinvestment study
Additional hydroelectric generating plant at this location is economically justified. Recommends a 500 kW plant with two identical 250 kW open flume type units.

0120

TITLE: Feasibility study for the city of Twin Falls sewage hydroelectric project in Twin Falls County, Idaho

CORPORATE NAME: J-U-B ENGINEERS, INC..

SOURCE: Washington, DC,USA, US Dept. of Energy, 1981. 134 p.

SUBJECT: Mini-Hydroelectric power preinvestment study
Installing a small hydro plant on the discharge of a city /sewage trunk line/. Staged, non-clog, hydraulic turbines manufactured by Cornell Pump Company are capable of screening the influent. Estimated costs and annual energy production. Project approved

0121

TITLE: Fish passage and small hydroelectric technology: a state of the art review
AUTHOR: Bell, M.C.
Hildebrand, S.G.
SOURCE: Washington, DC, USA, US Dept. of energy, 1979. 8 p.
DOCUMENT NO.: NTIS:CONF-791056-3
SUBJECT: Mini-Hydroelectric power: economic aspects /Fish passage/ facilities as a possibly significant factor in determining the economic feasibility of small hydro projects; includes downstream passage facilities and types of structures available to move upstream migrating fish around dams 0122

TITLE: Frazil ice in rivers and oceans
AUTHOR: Martin, Seelye
SOURCE:
SERIES: Annual review of fluid mechanics, 1981, v. 13, pp. 379-397
SUBJECT: Mini-Hydroelectric power
Problems of ice formation, flow, and deposistion, including reduction of head, blocking of turbine intakes, blockage of /reservoir/s, and freezing open of /gates/ 0123

TITLE: Fundamental economic issues in the development of small-scale hydro
AUTHOR: Brown, P.W.
Ringo, M.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 31 p.
DOCUMENT NO.: NTIS:DOE/RA-23-216.00.0-02
SUBJECT: Mini-Hydroelectric power
The analysis, based on literature, case studies, and on-site visits, suggests that legal and regulatory constraints are major obstacles to small-scale hydroelectric power development. The discussion, which treats a hydro site as if it were a small business, consists of four parts: costs, supply, /energy demand/, and profitability. (Economic aspects) 0124

TITLE: Graphical and computer analysis of tailrace surges
AUTHOR: Martin, C.S.
SOURCE:
SERIES: ASCE journal, Power Division, July 1971, v. 97, no. PO3, paper 8261, pp. 697-706
SUBJECT: Mini-Hydroelectric power
/Computer simulation model/ of tailrace surges 0125

TITLE: Guia para la elaboracion de proyectos de pequenas centrales hidroelectricas
AUTHOR: Nozaki, T.
SOURCE: Lima, Peru, Ministerio de Energia y Minas, 1980. 83 p.
SUBJECT: Mini-Hydroelectric power preinvestment study
Technical manual for civil engineering design and selection of equipment required for feasibility studies on mini-hydro generation
0126

TITLE: Guia para la formulacion de solicitudes de prestamo; energia electrica: rural electrificacion
CORPORATE NAME: INTERAMERICAN DEVELOPMENT BANK - DEPARTAMENTO DE ANALISIS DE PROYECTOS.
SOURCE: Washington, DC, USA, Interamerican Development Bank, 1980. 103 p.
SUBJECT: Mini-Hydroelectric power
Procedure, terms of reference, and scope of studies to be presented to the IDB when requesting loans for rural electrification, including mini-hydropower generation 0127

TITLE: Guidelines to assist rural electric cooperatives to fulfill the requirements of sections 201 and 210 of PURPA for cogeneration and small power production
CORPORATE NAME: NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION.
SOURCE: Washington, DC, USA, 1981. 189 p.
DOCUMENT NO.: ANL/EES-TM-125
SUBJECT: Mini-Hydroelectric power
Legal, technical, and economic reference manual to assist utilities in dealing with small power producers and cogenerators - policies, procedures, and purchasing rates
0128

TITLE: Handbook of homemade power
AUTHOR: Bassett, C.D.
SOURCE: New York, NY, USA, Bantam Books, 1974. 367 p.
SUBJECT: Mini-Hydroelectric power
Contains C.D. Basset's five-part article on hydro-power originally printed in Popular Science, 1947. Also contains plans for a water wheel. 0129

TITLE: Hand-made hydro power
AUTHOR: Langhorne, H.F.
SOURCE:
SERIES: Alternative sources of energy (A.S.E.) (Milaca MN, USA). October 1977. no. 28, pp. 7-11
SUBJECT: Mini-Hydroelectric power 0130

TITLE: Harnessing water power for home energy
AUTHOR: McGuigan, D.
SOURCE: Charlotte, VT, USA, Garden Way, 1978. 101 p.
SUBJECT: Mini-Hydroelectric power
Various sizes, shapes, and types of small scale hydro units: their mechanics, installation, and operation. 0131

TITLE: Hints on the development of small water power, Pamphlet "A"
CORPORATE NAME: JAMES LEFFEL COMPANY.
SOURCE: Springfield, OH, USA, James Leffel Company, n.d..
SUBJECT: Mini-Hydroelectric power
Information to help assess energy potential of streams: how to measure head and flow, etc. 0132

TITLE: Home energy how-to
AUTHOR: Hand, A.J.
SOURCE: New York, NY, USA, Harper and Row, 1977. See chapter 11, pp. 222-239
SUBJECT: Mini-Hydroelectric power 0133

TITLE: How to estimate cost-effectiveness of small hydroelectric projects
AUTHOR: Pruce, Leslie M.
SOURCE:
SERIES: Power, September 1981, v., 125, no. 9, pp. 65-69
SUBJECT: Small hydroelectric power: preinvestment study
Formulas and charts for predicting quickly whether any hydro site less than 15 Mw and 60 feet of head is worth developing. An example shows how to make the necessary calculations 0134

TITLE: How to run small power stations efficiently
SOURCE: Shanghai, China, Shangnai People's Press, 1971.
SUBJECT: Mini-Hydroelectric power
Operation of small power stations 0135

TITLE: HOW TO START MANUFACTURING OF EQUIPMENT FOR SMALL HYDRO-POWER PLANTS IN DEVELOPING COUNTRIES.
AUTHOR: Hueter, Alfred
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 9 p. diagram..
DOCUMENT NO.: UNIDO-ID/WG.403/23
SUBJECT: Launching manufacture of equipment for small hydroelectric power plants in DCs - (1) water resources development needs; hydroelectric equipment for small hydroelectric power stations; turbines; local supply (2) logistics of decision making on domestic production; engineering design (3) product development, prototypes and production planning (4) role of government agencies (5) programming of development work; training 0136

TITLE: Hydraulic control and space considerations for low-head high-flow small hydroturbine machinery
AUTHOR: Patten, J.E.
Earles, J.D.
Dixon, N.P.
CONFERENCE: American Society of Mechanical Engineers (ASME) Winter Annual Meeting, Chicago, IL, USA, 16-21 November 1980
SOURCE: New York, NY, USA, ASME, 1980.
SERIES: Proceedings, p. 75-80
SUBJECT: Mini-Hydroelectric power preinvestment study
Feasibility of /low head/ generation on a diversion dam on the Sacramento River. /Site selection/ considerations: variable /forebay/ and tailwater elevations; limitations of the existing /dam/ (/existing facilities/); shallow bedrock; limited space; aesthetics and anadromous /fish passage/ 0137

TITLE: Hydroelectric development - without dams, reservoirs and penstocks
AUTHOR: Hoffman, Phillip
CONFERENCE: IEEE/ASME/ASCE Joint Power Generating Conference, Charlotte, NC, USA, 7-11 October 1979
SOURCE: Washington, DC, USA, IEEE, 1979. 6 p.
DOCUMENT NO.: CH1464-7/79
SUBJECT: Mini-Hydroelectric power
A simple scheme to recover energy wasted through use of a pressure regulating station, by installing a hydraulic turbine just upstream from the regulating station (additions to /existing facilities/) 0138

TITLE: Hydro-electric developments and engineering
AUTHOR: Koester, F.
SOURCE: New York, NY, USA, Van Nostrand, 1909.
SUBJECT: Mini-Hydroelectric power 0139

TITLE: Hydroelectric generating units of small capacity for low operating heads
AUTHOR: Passmore, R.
CONFERENCE: American Society of Mechanical Engineers (ASME) Winter Annual Meeting, Chicago, IL, USA, 16-21 November 1980
SOURCE: New York, NY, USA, ASME, 1980.
SERIES: Procedings, pp. 1-13
SUBJECT: Mini-Hydroelectric power
Small /axial flow turbines/-/generators/ units of various forms, particularly their application for small isolated loads where /frequency control/ would be necessary 0140

TITLE: Hydroelectric power: Burundi's national electrification programme
AUTHOR: Kuntz, H.
SOURCE: Eschborn, FR Germany, German Appropriate Technology Exchange, 1980.
SUBJECT: Mini-Hydroelectric power planning in Burundi 0141

TITLE: Hydroelectric power from a Hoppes hydroelectric unit, Bulletin "H-49"
CORPORATE NAME: JAMES LEFFEL COMPANY.
SOURCE: Springfield, OH, USA, James Leffel Company, n.d..
SUBJECT: Mini-Hydroelectric power
Describes workings and different models of the Hoppes unit. These small turbines run on a maximum of 25 ft. of head and a maximum output of 10 kW 0142

TITLE: Hydroelectric power: rural electrification through isolated systems
AUTHOR: Kuntz, H.
SOURCE: Eschborn, FR Germany, German Appropriate Technology Exchange, 1979.
SUBJECT: Mini-Hydroelectric power
Rural electrification
0143

TITLE: HYDROELECTRIC POWER TECHNOLOGY IN NORWAY WITH SPECIAL EMPHASIS ON SMALL-SCALE POWER PLANTS
AUTHOR: GUNNES O
MJOLLNER W
BERGSENG J
JENSEN T
LUNDQUIST D
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 81 P. DIAGRAMS, GRAPHS, TABLES..
DOCUMENT NO.: UNIDO-ID/WG.305/40
SUBJECT: /HYDROELECTRIC POWER/ IN /NORWAY/, PARTICULARLY SMALL-SCALE POWER PLANTS - (1) BACKGROUND AND PRESENT STATUS; GENERATION CAPACITY (2) PREREQUISITES FOR SETTING UP SMALL HYDROELECTRIC STATIONS; LOCAL WORKSHOPS; /MAINTENANCE AND REPAIR/ OF HYDRAULIC MACHINERY; /CORROSION/ AND EROSION PROBLEMS; CAVITATION AND MECHANICAL ABRASION (3) SMALL /TURBINES/ (4) /GENERATORS/, /AUTOMATIC CONTROL/ (5) WATERWAYS, TUNNELS, CHANNELS, PIPES, /DAM/S, /POWER HOUSE/S (6) /HYDROLOGY/ OF SMALL CATCHMENTS (7) WATER SUPPLY AND ENERGY PRODUCTION; /PLANNING/ 0144

TITLE: Hydroelectricity for public supply in Britain, 1881-1894
AUTHOR: Tucker, D.G.
SOURCE:
SERIES: Proceedings Institute of Electrical Engineering, London, England, v. 123, no. 10, October 1976, pp. 1026-1034
SUBJECT: Mini-Hydroelectric power: history
Eight hydroelectric generating stations used for public supppl; in nineteenth century UK
0145

TITLE: Hydrologic studies for hydropower assessment
AUTHOR: Gladwell, John S.
CONFERENCE: Small Hydroelectric Powerplants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 22-58
SUBJECT: /Hydrology/ studies for mini-hydroelectric power development 0146

TITLE: Hydropower
AUTHOR: McKillop, A., ed.
SOURCE: Wadebridge, UK, Wadebridge Press, 1975. 74 p
SUBJECT: Contains a number of designs by C.D. Bassett
Mini-Hydroelectric power 0147

TITLE: HYDRO-POWER FOR RURAL DEVELOPMENT.
CONFERENCE: INTERNATIONAL FORUM ON APPROPRIATE INDUSTRIAL TECHNOLOGY, NEW DELHI AND ANAND, INDIA, 1978
CORPORATE NAME: UNIDO.
SOURCE: (IN 'TECHNOLOGIES FROM DEVELOPING COUNTRIES', VOL.,
DOCUMENT NO.: UNIDO-ID/WG.282/65
SUBJECT: TECHNOLOGY FOR SMALL-SCALE HYDROELECTRIC POWER GENERATION (10 TO 100 KW) FOR RURAL DEVELOPMENT - TECHNICAL AND ECONOMIC ASPECTS OF SYSTEMS INTENDED FOR MANUFACTURE WITHIN THE COUNTRY OF USE; STATUS OF COMMERCIALIZATION. CONTACT ADDRESSES 0148

TITLE: Hydropower potential in Subernrekha main canal
AUTHOR: Bahadur, J.
Suresh, Chandra S.
CONFERENCE: International Symposium on Water Resources Systems, Roorkee, India, December 1980. Proceedings, Special Session on Small Scale, Low Head and Hybrid Micro Hydel Generation
CORPORATE NAME: Water Resources Development Training Centre.
SOURCE: Roorkee, India, 1980.
SUBJECT: Mini-Hydroelectric power in India 0149

TITLE: Implementacion de mini y micro centrales en il Ecuador
AUTHOR: Novillo, M.
SOURCE: Quito, Ecuador, INECEL, 1980. 33 p.
SUBJECT: Mini-Hydroelectric power
Mini-hydro development plan for Ecuador with evaluation of rural energy needs, estimated available resources, implementation process, and preliminary pilot work 0150

TITLE: IN PERU. (ON SMALL HYDROELECTRIC POWER PLANTS).
AUTHOR: INDACOCHEA EM
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 45 P. MAPS, TABLES, DIAGRAMS..
DOCUMENT NO.: UNIDO-ID/WG.305/7
SUBJECT: SMALL-SCALE HYDROELECTRIC POWER SUPPLY IN PERU - (1) /DESIGN/ AND CONSTRUCTION OF A PILOT PLANT HYDROELECTRIC POWER STATION IN A RURAL AREA (2) CHARACTERISTICS AND SPECIFICATIONS (3) OBJECTIVES ACHIEVED AND PROBLEMS OF TECHNOLOGICAL DEVELOPMENT (4) PLANT OPERATION; DESIGN CALCULATIONS; COSTS; PROSPECTS FOR USE 0151

TITLE: Industrie francaise des microcentrales hydroelectriques
AUTHOR: Chapron, M.
SOURCE:
DOCUMENT NO.: CODEN:ANMSA3
SERIES: Ann mines, April 1979, v. 185, no. 4,pp.61-70
SUBJECT: Mini-Hydroelectric power
Various types of turbines and /generators/ used by small hydroelectric power plants in France. Factors favoring such installations 0152

TITLE: INFORME. (WORKSHOP ON MINI-HYDROELECTRIC GENERATION PLANTS, VIENNA, 1981.
CONFERENCE: WORKSHOP ON DESIGN AND INSTALLATION OF MINI-HYDROELECTRIC GENERATION PLANTS, VIENNA, 1981.
CORPORATE NAME: UNIDO
AUSTRIA
OLADE (LATIN AMERICAN ENERGY ORGANIZATION)
SOURCE: Vienna, 1981. 20 p.,
DOCUMENT NO.: UNIDO-UNIDO/IO.442
SUBJECT: Report of a meeting on /design/ and installation of small hydroelectric power plants - summarizes discussion on: legal aspects, planning, geological and /hydrology/cal aspects, /control mechanisms/, turbines, civil engineering, economic aspects, costs, technology transfer, case studys 0153

TITLE: Innovation in surge-chamber design
AUTHOR: Rathe, L.
SOURCE:
SERIES: International water power dam construction, June-July 1975, v. 27, no. 6-7, pp. 244-248
SUBJECT: Mini-Hydroelectric power
/Surge facilities/ at the Driva Hydroelectric Powerplant, Norway. A small chamber, partly filled with compressed air, replaces the conventional surge-shaft and surge-chamber arrangement 0154

TITLE: Innovative equipment for small-scale hydro developments
AUTHOR: Lawrence, J.D.
Pereira, L.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22 June 1981
SOURCE: Washington, DC, USA, US Dept. of Energy, 1981. 17 p.
SUBJECT: Mini-Hydroelectric power
Feasibility of using off-the-shelf pumps as /pump turbines/, with /induction motor generators/. Other combinations of available equipment, such as /speed control/ increasers, /inlet valves/, and /gates/, appropriate for small-scale hydro installations. /Computer simulation model/ used to estimate performance of pumps in the turbine mode of operation 0155

TITLE: Institutional requirements for development of micro-hydro powerplants
AUTHOR: Quevedo, Carlos
CONFERENCE: Small Hydroelectric Powerplants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 250-262
SUBJECT: Institutional requirements for micro-hydroelectric power development 0156

TITLE: INSTITUTIONAL STRENGTHENING. (HYDROELECTRIC POWER, NEPAL).
AUTHOR: Shrestha, A.K.
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 5 p.,
DOCUMENT NO.: UNIDO-ID/WG.376/12
SUBJECT: Small-scale hydroelectric power generation (MHG) in Nepal - (1) background of /energy needs/ and government policy for MHG development to benefit rural areas (2) present problems: an approach for low-cost development; training for technical personnel; need for standardization of equipment 0157

TITLE: Intakes and outlets for low-head hydropower
AUTHOR: Pugh, Clifford A.
SOURCE:
SERIES: ASCE journal, hydraulics division, September 1981, v. 107, no. 9, p. 1029 (17)
SUBJECT: Mini-Hydroelectric power
State-of-the-art review on standardization in /low head/ power development. Flow passage design practices. Reducing equipment costs through standardization of predesigned units in the range of 75-5000 kW, and through simplified /intakes/ and /draft tubes/ designs 0158

TITLE: INTEGRATION OF SMALL HYDRO PLANTS OF YONGCHUN COUNTY INTO THE SMALL LOCAL GRID.
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO
CHINA.
SOURCE: Vienna, 1981. 7 p. diagrams, map.,
DOCUMENT NO.: UNIDO-ID/WG.329/24
SUBJECT: Integration of small hydroelectric power plants into a local electric power distribution grid in China - (1) Yongchun County in Fujian Province; use of small hydro-plants for agriculture and rural industry; integration with the provincial network (2) technical aspects of electricity collection and transfer; equipment 0159

TITLE: INTRODUCTION TO THE DEVELOPMENT OF SMALL HYDRO-POWER GENERATION IN CHINA.
AUTHOR: MAO WEN JING
DENG BING LI
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 8 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/24
SUBJECT: DEVELOPMENT OF SMALL HYDROELECTRIC POWER GENERATION IN CHINA - (1) RURAL ELECTRIFICATION THROUGH WATER POWER RESOURCES INCLUDING MEDIUM AND SMALL RIVERS; LOCAL POWER SUPPLY FOR COMMUNES AND RURAL INDUSTRY; REPLACEMENT OF DIESEL ENGINES FOR SAVINGS OF FUEL (2) PRESENT AND PROSPECTIVE PRODUCTION OF TURBINES AND /GENERATORS/ FOR SMALL STATIONS; EXPORT OF HYDRO-SETS AND OFFER OF KNOWHOW TO DEVELOPING COUNTRIES 0160

TITLE: Irrigation and drainage; today's challenges
AUTHOR: Warnick, Calvin C.
CONFERENCE: Special Conference, Irrigation and Drainage, Today's Challenges, Boise, ID, USA, 23-25 July 1980
SOURCE: New York, NY, USA, American Society of Chemical Engineers, 1980.
SERIES: Proceedings, p. 216-27
SUBJECT: Mini-Hydroelectric power
Advantages and approaches to developing hydro power in irrigation systems. Low environmental impact and structural expenditure. Potential problems with ownership, seasonality, financing and institutional arrangements 0161

TITLE: Johnson Lake Inlet low-head hydroelectric project. Feasibility assessment report
AUTHOR: Hill, Corvallis
SOURCE: Washington D.C., USA, US Dept. of Energy, 1979. 33 p.
DOCUMENT NO.: NTIS:DOE/ID/01779-1
SUBJECT: Mini-Hydroelectric power preinvestment study
On the basis of technical, economic, legal and environmental studies, a projected water level control /dam/ was not considered economically feasible 0162

TITLE: Kaarni power station
AUTHOR: Ahovouri, K.
Leino, K.
SOURCE:
SERIES: SAEHKOE (Finland), March, 1978, v. 51, no.3, pp. 81-84
SUBJECT: Mini-hydroelectric power
Includes turbines with no regulator and equipped with simple /clappet valves/, /asynchronous generators/, precise synchronization with a frequency relay, secured over/speed control/ protection for /damage prevention/, a secured D.C. system and automatic with a clock started and stopped operation allowing for the state of the network 0163

TITLE: Land use and small-scale hydropower: an overview of environmental impacts and institutional responses
AUTHOR: Plantico, Rueben C.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA. 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, p. 688-93
SUBJECT: Mini-Hydroelectric power
Nature and extent of land impacts from both "run of river" and "store and release" small-scale hydroelectric power projects. Circumstances associated with adverse land effects. Policy options to minimize the possible adverse environmental effects of small-scale hydropower development 0164

TITLE: Latin American Program for Energy Cooperation (PLACE)
CORPORATE NAME: OLADE (LATIN AMERICAN ENERGY ORGANIZATION).
SOURCE: Quito, Ecuador, OLADE, 1981. 187 p.
SUBJECT: Mini-Hydroelectric power
Programming and strategies for the PLACE: energy demand and options for Latin America. Gives information related to various energy resources including hydroelectricity 0165

TITLE: Legal obstacles and incentives to the third development of small-scale hydroelectric potential in the six New England states: Executive summary
CORPORATE NAME: FRANKLIN PIERCE LAW CENTER.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1980. 75 p.
DOCUMENT NO.: NTIS:DOE/RA/04934-07
SUBJECT: Mini-Hydroelectric power
Relationship of federal to state law and regulations with respect to small-scale hydroelectric facilities. Overview of the Energy Law Institute reports on legal and regulatory systems of the six states. The dual (federal-state) system examined with respect to the law of pre-emptions as it applies to hydroelectric development. 0166

TITLE: Living with energy
AUTHOR: Alves, R.
SOURCE: New York, NY, USA, Penguin Books, 1978.
SUBJECT: Mini-Hydroelectric power
Contains directory of professionals, institutions, designers, and agencies involved in the water power field 0167

TITLE: LOCAL DESIGN AND MANUFACTURE OF EQUIPMENT AND AUXILIARY FOR MINI-HYDRO-POWER IN THAILAND.
AUTHOR: Bhadrakom, K.
Chartpolrak, C.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 4 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/15
SUBJECT: Mini hydroelectric power development in Thailand - (1) background information (2) domestic production of equipment: turbines, generators, switchgears and switchboards, transformers (3) assistance needed by local manufacturers 0168

TITLE: Local experience with micro-hydro technology
AUTHOR: Meier, Ueli
SOURCE: St. Gallen, Switzerland, Swiss Center for Appropriate Technology (SKAT), 1981. 170 p.
SERIES: Harnessing water power on a small scale, publication no. 11, v. 1
SUBJECT: Mini-Hydroelectric power
Various aspects of small hydro-power development in rural areas. Advantages of micro-hydro (up to 100 kW) over large hydro-power and other energy sources. Use of local materials and techniques. Modern hydraulic turbine technology - cross-flow /Michell turbines/, /Banki turbines/. Project examples in Nepal and Thailand. Economic and institutional considerations. Finance. Bibliography 0169

TITLE: LOCAL MANUFACTURE OF MINI-HYDRO-EQUIPMENT.
AUTHOR: O'Lall, Joseph
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 16 p. diagrams.,
DOCUMENT NO.: UNIDO-ID/WG.403/24
SUBJECT: Domestic production of turbines for mini hydroelectric power plants - (1) manufacturing potential; tools; training (2) the manufacturing of a Banki turbine (1kw): planning, engineering design, the process, the runner, flume, the transition piece, shaft stands or supports, the generator stand 0170

TITLE: LOCAL MANUFACTURING OF WATERTURBINES.
AUTHOR: Eisenring, Markus
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 36 p. graphs, illus.,
DOCUMENT NO.: UNIDO-ID/WG.403/25
SUBJECT: Local manufacture of turbines for small hydroelectric power plants in developing countries - (1) ecological and economic aspects (2) low costs engineering design specifications for small power plants (3) requirements for local turbines manufacturing (4) /crossflow turbines/: technical aspects. Process statistics, illustrations 0171

TITLE: Lost megawatts flow over nation's myriad spillways
AUTHOR: Lilienthal, D.E.
SOURCE:
SERIES: Smithsonian, September 1977, v. 8, no. 6, pp. 82 (8)
SUBJECT: Mini-Hydroelectric power
Undeveloped hydro potential in US. History of /dam/s and mills in New England. Potential sites, irrigation projects, and navigation dams. Lower relative production and development costs of small and medium size projects. (Economic aspects) 0172

TITLE: Low-cost development of small water power sites
AUTHOR: Hamm, Hans W.
CORPORATE NAME: VOLUNTEERS IN TECHNICAL ASSISTANCE. VITA
SOURCE: Arlington, VA, USA, VITA, 1975. 43 p., diagrams and illustrations
SUBJECT: Mini-Hydroelectric power
Guidelines for assessing power needs and measuring power potential (gross head, flow rate, head losses), and for plant location, construction, and installation (small /dam/s, water turbines and /water wheels/). Instructions for building /Michell turbines/ 0173

TITLE: Lower Main Canal hydro stations. Feasibility assessment report.
CORPORATE NAME: US DEPT. OF ENERGY.
SOURCE: Washington, DC, USA, 1978. 90 p.
DOCUMENT NO.: NTIS:DOE/ID/01783-1
SUBJECT: Mini-Hydroelectric power
Results of analyses covering alternative layouts for civil engineering works and alternative turbines-/generators/ units at Modesto Reservoir and Stone Drop 0174

TITLE: Low-head hydroelectric power feasibility. 1970-1982 (citations from the NTIS data base)
CORPORATE NAME: NATIONAL TECHNICAL INFORMATION SERVICE.
SOURCE: Washington, DC, USA, NTIS, 1982. 100 p.
SUBJECT: Mini-Hydroelectric power preinvestment studys
Bibliography with 79 citations concerning assessments, studies, and reports concerning the feasibility of /low head/ hydroelectric power in general and at specific locations 0175

TITLE: Low-head hydropower: focus group results
CORPORATE NAME: MARKET FACTS.
SOURCE: Washington, DC, USA, US Dept. of Energy. 1978. 32 p.
DOCUMENT NO.: NTIS:DOE/TIC-10017
SUBJECT: Mini-Hydroelectric power - economic aspects
Information to evaluate the barriers and opportunities associated with the successful commercialization of /low head/ hydropower
0176

TITLE: LOW-HEAD POWER GENERATION FOR RURAL ECONOMIC DEVELOPMENT IN KENYA.
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO
KENYA, MINISTRY OF COMMERCE AND INDUSTRY.
SOURCE: VIENNA, 1980. 17 P. TABLES, MAP.,
DOCUMENT NO.: UNIDO-ID/WG.305/35
SUBJECT: SMALL AND MEDIUM-SIZED HYDROELECTRIC POWER GENERATION IN KENYA - /HYDROLOGY/ RESOURCES; PATTERN OF ENERGY CONSUMPTION AND PRODUCTION; REGIONAL IMBALANCES; DEVELOPMENT PLANNING; /ENERGY DEMAND/ OF RURAL INDUSTRY; PRESENT POWER GENERATION, PROBLEMS, TRENDS; THE CONCEPT OF /LOW HEAD/ POWER GENERATION; ECONOMIC ASPECTS, ETC
0177

TITLE: Low-head/small hydro-electric workshop
CONFERENCE: Low-head/Small Hydro-Electric Workshop, University of New Hampshire, Durham, NH, September 1977
CORPORATE NAME: ENERGY AND RESEARCH DEVELOPMENT ADMINISTRATION.
SOURCE: Washington, DC, USA, US Dept. of Energy.
SUBJECT: Mini-Hydroelectric power
Resource assessment, engineering development, institutional and legal barriers, environmental and safety issues, economics and marketability, and demonstrations. Over 90 recommendations from conception to final form
0178

TITLE: Magnetically combined turbine and generator
AUTHOR: Nair, R.
CONFERENCE: IEEE Power Engineering Society, Winter Meeting, Atlanta, GA, USA, 1 - 6 February 1981
SOURCE: Piscataway, NJ, USA, IEEE, 1981. 8 p.
DOCUMENT NO.: Pap 81 WM 190-8
SUBJECT: Mini-Hydroelectric power
Reducing costs for hydroelectric units of less than 1000 kW. Magnetically combined turbines and /generators/ (M.C.T.G.) provide greatly reduced overall length and simplification, and can also be used for pumping. Hydraulic and electrical /design/ relationships. Tests on small working models
0179

TITLE: Main trends of hydroelectric development in Japan
AUTHOR: Susuki, Takamura
SOURCE: Tokyo, Japan,
SERIES: Water power, February 1972, v. 24, no. 2, pp. 43-51
SUBJECT: Mini-Hydroelectric power
History of hydro development in Japan; trends behind the progression from run-of-river plants to large high-head /pumped storage/ stations
0180

TITLE: Marsh Lake dam
AUTHOR: Thompson, W.J.
Engweiler, J.A.
Gilbert-Green, J.A.
CONFERENCE: National Hydrotechnology Conference, 3rd, Quebec, 30-31 May 1977
SOURCE: Montreal, Canada, Canadian Society for Civil Engineering,
SERIES: Proceedings, v.2, pp. 794-814
SUBJECT: Mini-Hydroelectric power
Design and construction of a /steel cantilever dam/ on the Yukon River, Canada, that can retain 2.4 meters of water to store a volume of 1.02 billion cubic meters. Built on previous foundation, without cofferdams or diversion, and with little obstruction to flow of river. Construction in half the time and at about half the costs of a conventional concrete structure
0181

TITLE: Maxwell Hydroelectric Project feasibility assessment report
AUTHOR: Beck, R.W.
SOURCE: Washington D.C., USA, US Dept. of Energy, 1979. 112 p.
DOCUMENT NO.: NTIS:DOE/ID/01813-1
SUBJECT: Mini-hydroelectric power preinvestment study Includes site reconnaissance, system loads, growth rate, project arrangements and layouts, power output, costs estimates, economic analyses, design and construction schedule, and environmental review 0182

TITLE: Measuring water flow
AUTHOR: Marier, D.
SOURCE:
SERIES: Alternative sources of energy (A.S.E.) (Milaca, MN, USA), July 1971, no. 1, pp. 8-10
SUBJECT: Mini-Hydroelectric power: /hydrology/ 0183

TITLE: MEDIUM AND SMALL-SCALE HYDRO POWER PLANTS IN ETHIOPIA.
AUTHOR: HAILU MG
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG) 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 11 p. tables.
DOCUMENT NO.: UNIDO-ID/WG.329/5
SUBJECT: Medium and small-scale hydroelectric power generation in Ethiopia - (1) the hydro-power potential: main rivers; the energy sector; objectives (2) existing small and micro hydro-power plants; programming; projects in the western regions; project phased and constraints 0184

TITLE: Mersey-Forth hydro-electric power stations
AUTHOR: Montgomery, A.P.
Parr, W.H.T.
Watkins, H.G.
Milbourne, D.R.
CORPORATE NAME: HYDRO-ELECTRIC COMMISSION OF TASMANIA.
SOURCE:
SERIES: Institute of Engineers of Australia. Electrical Engineering Transactions, 1975, v. EE 11, no. 2, pp. 61-67
SUBJECT: Mini-Hydroelectric power
Electrical and mechanical design and layout of the /power house/s and the main /switching control/ center, standardization to reduce costs. Australia 0185

TITLE: METHODOLOGY FOR FEASIBILITY STUDIES IN REPUBLIC OF KOREA. (HYDROELECTRIC POWER).
AUTHOR: Chun Yun Wook
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 10 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/6
SUBJECT: Methodology for feasibility studies concerning small hydroelectric power development in Korea R - (1) site assessment, local topography, site plan, rivers, evaluation (2) equipment, machinery, turbines, etc. (3) electric power generation; estimating capacity and energy output (4) construction of water reservoirs (5) economic aspects, costs 0186

TITLE: Metodologiasintetica para el calculo y especificacion preliminar de microcentrales hidroelectricas
AUTHOR: Indacochea, E.
CONFERENCE: Latin American Seminar on Small Hydro Power Stations, 1st, Girardot, Colombia, November 1980
SOURCE: Quito, Ecuador, OLADE, 1980. 21 p.
SERIES: Boletin energetico, no. 16
SUBJECT: Mini-Hydroelectric power
Synthetic procedure for /design/ and equipment selection for micro hydro power stations (under 50 kW). Method for /energy demand/ evaluation in small villages based on "consumption capacity." Evaluation of physical features: /hydrology/, ecology, geology, geomorphology, geotechniques, and evaluation of water flow and head measurement. Selection of /penstock/s and turbines 0187

TITLE: MHINEX (ASEAN micro/minihydro information exchange system)
CORPORATE NAME: ASEAN POWER UTILITIES/AUTHORITIES COOPERATION IN MICRO/MINI-HYDRO DEVELOPMENT.
SOURCE: Jakarta, Indonesia, Electric Power Research Centre, 1983. 9 p.
SUBJECT: Mini-Hydroelectric power
Bibliography - articles, books, reports, and conferences dealing with various aspects of mini-hydroelectric power 0188

TITLE: MICRO HYDRO POWER FOR RURAL DEVELOPMENT. LESSONS DRAWN FROM THE EXPERIENCE OF THE INTERMEDIATE TECHNOLOGY DEVELOPMENT GROUP.
AUTHOR: Holland, Ray E.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 12 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/26
SUBJECT: Small hydroelectric power for rural development - (1) approaches which will not work (2) conditions for sucessful small projects: local management knowhow; the planning and project implementation stage; maintenance and repair (3) capital costs considerations, turbines, equipment; economic aspects; use of power for rural industry (4) case studies: China, Sri Lanka, Nepal, South-American countries; the world market for mini-hydro-power 0189

TITLE: Micro power: an old idea for a new problem
AUTHOR: Cotillon, J.
SOURCE:
DOCUMENT NO.: CODEN:IWPCDM
SERIES: International water power dam construction, January 1979, v. 31, no. 1, pp. 42-48
SUBJECT: Mini-Hydroelectric power
Head and flow rates much lower than were once thought economical can now be utilized efficiently. Equations for choosing a site, and examples of micro plants supplying isolated systems 0190

TITLE: Microcentrales hidroelectricas como parte de una nueva estrategia energetica latinoamericana
AUTHOR: Mata, M.
CONFERENCE: Seminario "Technologia Industrializacion y Medio Ambiente," 1980
SOURCE: Cumana, Venezuela, 37 p.
SUBJECT: Mini-hydroelectric power development in Latin America. Social aspects, planning 0191

TITLE: MICRO-HYDEL GENERATION IN INDIA.
AUTHOR: DEODAS TA
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 10 p.,
DOCUMENT NO.: UNIDO-ID/WG.329/6
SUBJECT: Micro-hydroelectric power generation in India - (1) present status of small capacity hydro-electric projects (2) development potential (3) technical and economic aspects and engineering data: civil engineering works; electrical and mechanical works (4) firms manufacturing turbines (5) training programmes
0192

TITLE: MICRO-HYDEL PROJECT IN NEPAL.
AUTHOR: CHATURVEDI SN
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 4 p.,
DOCUMENT NO.: UNIDO-ID/WG.329/11
SUBJECT: Mini-hydroelectric power development in Nepal - (1) favourable Himalayan topography and vast water resources (2) status of seven small projects benefiting rural development
0193

TITLE: Micro-hydro: a bibliography
AUTHOR: Moore, Beth
SOURCE: Moscow, ID, USA, Idaho Water Resources Institute, 1979. 19 p.
SUBJECT: Mini-Hydroelectric power
Bibliography, directory of manufacturers, independent installations, consultants, and other information sources
0194

TITLE: Micro-hydro; civil engineering aspects
AUTHOR: Mansell, D.
Atkins, G.
Kiek, S.
SOURCE: Lae, Papua New Guinea, PNG University of Technology, 11 p.
SUBJECT: Mini-Hydroelectric power
Problems encountered in developing small-scale water power: low water flow calculations; construction of channels and flumes; soil instabilities associated with /earth dam/ construction
0195

TITLE: Microhydro: guidance manual of procedures for assessment of micro hydro potential
CORPORATE NAME: ENERGY, MINES & RESOURCES CANADA.
SOURCE:
SERIES: Energy, Mines & Resources Canada, report ER80-9E, October 1980, v. 2, 280 p.
SUBJECT: Mini-Hydroelectric power preinvestment study Assessment of actual sites in remote communities in British Columbia, Canada. Reconnaissance and prefeasibility level procedures. Basic data collection, with topographic mapping and use of /hydrology/ data. Costs estimating and financial planning
0196

TITLE: MICRO-HYDRO POWER IN GUYANA.
AUTHOR: O'LALL JN
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 31 p. diagrams..
DOCUMENT NO.: UNIDO-ID/WG.329/31
SUBJECT: Small hydroelectric power in Guyana - (1) use of /water wheels/: over-shot, breast-shot and under-shot water wheels; water paddle (2) versatile and easily constructed /Banki turbines/ (3) low capacity plants (4) projects at Wamakuru, Eclips Fall and Fumatumari
0197

TITLE: Micro-hydro power projects
CORPORATE NAME: VOLUNTEERS IN TECHNICAL ASSISTANCE. VITA
SOURCE: Arlington, VA, USA, VITA, 1980. 6 p.
SERIES: Energy fact sheet, no.4
SUBJECT: Mini-Hydroelectric power
Overview of environmentally-sound, electrical and mechanical hydro power systems of less than 100 kW. Decision list to help project initiators decide whether to pursue the idea of a micro-hydro system. List of resource groups for further information
0198

TITLE: Micro-hydro power: reviewing an old concept
AUTHOR: Alward, R.
Eisenbart, S.
Volkman, J.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 67 p.
DOCUMENT NO.: NTIS:DOE/ET/01752-1
SUBJECT: Mini-Hydroelectric power
Resource directory, with bibliography, plans, people, and companies for information of micro-hydro (less than 100 kW) installers
0199

TITLE: Microhydro powerplant program in Ecuador
AUTHOR: Galarza, Leoncio
CONFERENCE: Small Hydroelectric Powerplants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 263-273
SUBJECT: Mini-Hydroelectric power planning in Ecuador
0200

TITLE: MICRO-HYDROELECTRIC POWER GENERATION IN PAPUA NEW GUINEA.
AUTHOR: MANIJUAIE GV
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 9 p..
DOCUMENT NO.: UNIDO-ID/WG.329/9
SUBJECT: Small hydroelectric power generation in Papua New Guinea - (1) geography, topography (2) functions of the Electricity Commission (3) energy supply; electric power (4) plans for development and use of hydro-power 0201

TITLE: MICRO-HYDROPOWER DEVELOPMENT.
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO
ENGINEERING CONSULTING FIRMS ASSOCIATION, TOKYO.
SOURCE: VIENNA, 1980. 23 P. TABLES.,
DOCUMENT NO.: UNIDO-ID/WG.305/29
SUBJECT: HYDROELECTRIC POWER GENERATION IN DEVELOPING COUNTRIES - (1) POWER SUPPLY AND /ENERGY DEMAND/ IN DC'S; SMALL POWER STATIONS IN NEPAL, INDONESIA AND PHILIPPINES (2) PROBLEMS AND POLICIES FOR POWER DISTRIBUTION TO ISOLATED RURAL AREAS: USE OF DIESEL ENGINES; FUEL PROBLEMS, RISE OF PRICES; INDICATED USE OF MICRO-HYDROPOWER (3) /SITE SELECTION/; FORMULAS FOR SELECTION OF TURBINES TYPE (4) APPLICATION OF MULTIPURPOSE /DAM/ 0202

TITLE: MICROHYDRO-STATION FROM ROMANIA EQUIPPED WITH TURBINES OF ROMANIAN PRODUCTION.
AUTHOR: PAR HOI DE
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 4 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/38
SUBJECT: SMALL HYDROELECTRIC POWER GENERATION AND TURBINES PRODUCTION IN ROMANIA - ELECTRIC POWER PRODUCTION; DEVELOPMENT POTENTIAL; NEED FOR MORE HYDROPLANTS AND /RENOVATION/ OF EXISTING UNITS; RELEVANT PLANNING; STANDARDIZATION OF EQUIPMENT 0203

TITLE: Micro-power plants and their insertion in the environment
AUTHOR: Martin, S.
SOURCE:
SUBJECT: Mini-Hydroelectric power
Technical feasibility of small-scale power plant construction. Economic benefits to be weighed against environmental impact of plant operation 0204

TITLE: Mini hydro developments for small areas
AUTHOR: King, R.M.
SOURCE:
DOCUMENT NO.: CODEN:IWPCDM
SERIES: International water power dam construction, January 1979, v. 31, no. 1, pp. 38-41
SUBJECT: Mini-Hydroelectric power
Feasibility of mini hydro. Maximum hydro capital costs compared with those for diesel generation. When used to meet an isolated load, the mini hydro scheme can provide significant costs advantages over diesel engines plant, and is also easier to operate. (Economic aspects) 0205

TITLE: Mini hydro installations in the province of Ontario
AUTHOR: Everdell, R.A.
Mohino, A.
CONFERENCE: American Society of Mechanical Engineers (ASME) Winter Annual Meeting, Chicago, IL, USA, 16-21 November 1980
SOURCE: New York, NY, USA, ASME, 1980.
SERIES: Proceedings, p. 65-73
SUBJECT: Mini-Hydroelectric power
Two small /prefabricated installation/s. Test of syphon /penstock/ and application of small unregulated /asynchronous generators/ supplying power into the distribution network 0206

TITLE: Mini hydro plants boost China's power supply
AUTHOR: Djurovic, M.
SOURCE:
SERIES: Energy international, November 1979, v. 16, no. 11, p. 44 (3)
SUBJECT: Mini-Hydroelectric power
Mini hydro plants with generating capacities of less than 1 Mw are common throughout China. They are generally connected to local grids 0207

TITLE: MINI HYDRO POWER STATIONS. (A MANUAL FOR DECISION MAKERS).
CORPORATE NAME: UNIDO
OLADE (LATIN AMERICAN ENERGY ORGANIZATION).
SOURCE: VIENNA, 1981. 163 P. TABLES, GRAPHS, DIAGRAMS, FLO,
DOCUMENT NO.: UNIDO-UNIDO/IS.225
SUBJECT: Handbook on mini-hydroelectric power generation units - provides guidance for decision making at national, local, planning and project implementation levels. Comparison of MHG with alternative energy sources. Development of MHG: programming; evaluation of resources and /energy demand/; preinvestment studys; financing; construction and start-up; operation and maintenance and repair; training. Choice of technology; equipment, adaptation, costs. Statistics, bibliography, diagrams 0208

TITLE: Mini hydro power stations - manual for decision taking
AUTHOR: Indacochea, E., et al
SOURCE: Vienna, Austria, UNIDO, 1981. 174 p.
SUBJECT: Mini-Hydroelectric power
Tailoring development to prevailing conditions, and formulating programs for mini-hydro generation. Other energy sources considered. Various aspects of planning and programming: evaluation of resources and /energy demand/ evaluation; preinvestment studys; financing; civil engineering works; starting up and maintenance and repair; human resources and technology development. Methodology for project design 0209

TITLE: MINI HYDRO-POWER DEVELOPMENT IN TANZANIA.
AUTHOR: Luhanga, B.E.A.T.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 4 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/4
SUBJECT: Mini hydroelectric power development in Tanzania - (1) initial phases of development; need for further development due to rise in oil prices; rural development aspects; site assessments being undertaken (2) decentralization of projects (3) local level manufacture of some equipment 0210

TITLE: Mini power stations in Sweden
AUTHOR: Lasu, Sten
CONFERENCE: International Conference on Renovation and Expansion of Water Power Stations, Zurich, Switzerland, 27 February-2 March 1979
SOURCE:
DOCUMENT NO.: CODEN:MVWGD4
SERIES: Proceedings, pp. 163-71
SUBJECT: Mini-Hydroelectric power /renovation/ Program for overhauling hundreds of discontinued small hydraulic power stations of 100-1500 kW in Sweden. Costs savings through different types of simplified automatic control units 0211

TITLE: MINI-HYDRO APPLICATION IN THE PHILIPPINES.
AUTHOR: DUMOL PG
DENTON FH
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 54 P. TABLES, GRAPHS, ILLUS.,
DOCUMENT NO.: UNIDO-ID/WG.329/2
SUBJECT: SMALL HYDROELECTRIC POWER GENERATION IN THE PHILIPPINES - (1) BACKGROUND, CLIMATE, TOPOGRAPHY (2) THE ELECTRIC POWER SECTOR; DIVERSIFICATION OF ENERGY SOURCES FOR URBAN AND RURAL AREAS (3) FUNCTIONS OF THE 'NATIONAL ELECTRIFICATION ADMINISTRATION' (4) RURAL ELECTRIC COOPERATIVES (5) PLANNED MINI-HYDRO DEVELOPMENT 1980-1987; ECONOMIC FEASIBILITY, COSTS; PROGRAMME TARGETS; INCREASING THE DOMESTIC CONTENT OF PROJECTS. APPENDS CASE STUDYS OF MINI-HYDRO SITES ON LUZON 0212

TITLE: MINI-HYDRO DEVELOPMENT IN LIBERIA.
AUTHOR: SONII BM
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 3 p.,
DOCUMENT NO.: UNIDO-ID/WG.329/20
SUBJECT: Mini-hydroelectric power development in Liberia - (1) installation of four hydro-units; co-operating engineering firms (2) rural development aspects of a new project for a 30 KW plant; related planning; /dam/ construction (3) development potential of MHG 0213

TITLE: MINI-HYDRO ELECTRIC PLANTS IN KENYA.
AUTHOR: WAGANA GM
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 2 p.,
DOCUMENT NO.: UNIDO-ID/WG.329/16
SUBJECT: Mini-hydroelectric power development in Kenya - (1) priority is given to increasing presently small share of hydroelectric generation; use of small rivers (2) existing schemes; development potential (3) need for training assistance; problems of equipment supply 0214

TITLE: MINI-HYDRO IN MALAYSIA.
AUTHOR: HOESNI BN
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 5 p. table.,
DOCUMENT NO.: UNIDO-ID/WG.329/10
SUBJECT: Mini-hydroelectric power development in Malaysia - (1) present status of construction; large development potential (2) process of project implementation (3) management and operation of stations (4) technical and economic aspects (5) local small foundry capacity for production of equipment; training programmes 0215

TITLE: MINI-HYDRO POWER DEVELOPMENT PROGRAMME IN BURMA.
AUTHOR: RALLIAN SANG B
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 6 p. map.,
DOCUMENT NO.: UNIDO-ID/WG.329/8
SUBJECT: Mini-hydroelectric power development in Burma - (1) favourable topography and water resources (2) functions of the Electric Power Corporation (3) the electricity supply and distribution system; diesel power stations 0216

TITLE: Mini-hydroelectric development in Nepal: case study
AUTHOR: Adhikari, P.P.
CONFERENCE: Seminar-workshop on the Exchange of Experiences and Technology Transfer on Mini-hydro Electric Generation Units, Kathmandu, Nepal, 10-14 September 1979
CORPORATE NAME: SMALL HYDEL DEVELOPMENT BOARD, NEPAL.
SOURCE: Kathmandu, Nepal,
SUBJECT: Mini-Hydroelectric power in Nepal: case study

0217

TITLE: MINI-HYDROELECTRIC GENERATION IN JAMAICA AND OTHER COUNTRIES OF THE CARICOM REGION.
AUTHOR: MINOTT DA
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 6 p.,
DOCUMENT NO.: UNIDO-ID/WG.329/14
SUBJECT: Mini-hydroelectric power generation in Jamaica and other Caribbean countries - (1) present status, development potential and planning in Jamaica, with reference also to Dominica, Belize, Guyana, St Vincent and the Grenadines, St Lucia and Grenada (2) a plant recently built in Jamaica: technical and economic aspects (4) capacities for local manufacture of equipment (turbines, pumps) (5) programmes for development and training

0218

TITLE: MINI-HYDROELECTRIC GENERATION IN TANZANIA.
AUTHOR: GOGOMOKA SAM
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 7 P. GRAPH.,
DOCUMENT NO.: UNIDO-ID/WG.305/4
SUBJECT: MINI HYDROELECTRIC POWER GENERATION IN TANZANIA - (1) LARGE-SCALE PROJECTS; BEGINNINGS OF SMALL-SCALE RIVER UTILIZATION; DEVELOPMENT POTENTIAL AND PROSPECTS; PROBLEMS AND CONSTRAINTS (2) LISTS (a) SMALL HYDROELECTRIC POWER STATIONS IN THE COUNTRY (b) RIVERS INVESTIGATED IN WEST TANZANIA 0219

TITLE: MINI-HYDROELECTRIC POWER GENERATION IN FINLAND.
AUTHOR: WALLEN JG
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 12 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/20
SUBJECT: SMALL HYDROELECTRIC POWER GENERATION IN FINLAND - (1) GOVERNMENT POLICY; ROLE OF SMALL STATIONS IN THE ELECTRIC POWER SYSTEM; CHOICE OF MACHINERY (TURBINES, /GENERATORS/) (2) CASE STUDY OF TECHNICAL AND ECONOMIC ASPECTS OF THE KAARNI POWER STATION. BIBLIOGRAPHY 0220

TITLE: MINI-HYDRO-POWER DEVELOPMENT IN PAKISTAN.
AUTHOR: ABDULLAH M
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 15 p. tables, diagrams.,
DOCUMENT NO.: UNIDO-ID/WG.329/37
SUBJECT: Mini-hydroelectric power development in Pakistan - development potential and planning; technical and economic aspects, costs; assessment of power potential; /intakes/ structure, power channel, /forebay/, /penstock/, /power house/; turbines, fabrication of the turbine; /generators/; distribution system; operation; manufacture of equipment 0221

TITLE: MINI-HYDRO-POWER DEVELOPMENT IN THE PHILIPPINES. (A CASE STUDY).
AUTHOR: YASUDA T
MURATA N
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 16 p. graphs, maps.,
DOCUMENT NO.: UNIDO-ID/WG.329/33
SUBJECT: Case study of a mini-hydroelectric power project in the Philippines - (1) Bicol region project background; economic aspects (2) /site selection/ for the station (3) /hydrology/cal data and analysis 0222

TITLE: MINI-HYDRO-POWER DEVELOPMENT PROGRAMME IN BURMA.
AUTHOR: KYAW THEIN U
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 5 P. MAP.,
DOCUMENT NO.: UNIDO-ID/WG.305/44
SUBJECT: DEVELOPMENT OF SMALL HYDROELECTRIC POWER GENERATION IN BURMA - (1) TOPOGRAPHY, /HYDROLOGY/ (2) ORGANIZATION OF ELECTRIC POWER CORPORATION (3) BASIC PRINCIPLES, CONCEPTS AND PRIORITIES FOR SETTING UP MINI-HYDRO-POWER UNITS; DEVELOPMENT PLANNING (4) ELECTRICITY SUPPLY SYSTEM, EXISTING POWER STATIONS (5) DOMESTIC /ENERGY DEMAND/, COTTAGE INDUSTRY, RURAL ELECTRIFICATION 0223

TITLE: MINI-HYDROPOWER GENERATION (MHG) IN TURKEY.
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO
MINISTRY OF ENERGY AND NATURAL RESOURCES, TURKEY.
SOURCE: Vienna, 1981. 9 p. tables.,
DOCUMENT NO.: UNIDO-ID/WG.329/18
SUBJECT: Mini-hydroelectric power generation in Turkey - (1) history of small hydropower generation in Turkey; significance for rural development (2) economic aspects; recent problems due to high overhead and operational costs (3) planning for electric power distribution system, including rural areas (5) installed capacity; administrative aspects, technical and economic specifications; training 0224

TITLE: MINI-HYDRO-POWER PLANTS IN SRI LANKA.
AUTHOR: KULASINGHE ANS
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 5 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/1
SUBJECT: MINI-HYDROELECTRIC POWER PLANTS IN SRI LANKA - LOCATIONS OF POWER STATIONS; /HYDROLOGY/; IRRIGATION /RESERVOIR/S AND /CANAL/S; DEVELOPMENT POLICY; CIVIL ENGINEERING; ELECTRO-MECHANICAL EQUIPMENT 0225

TITLE: MINI-HYDROPOWER PLANTS IN THE FEDERAL REPUBLIC OF GERMANY.
AUTHOR: OBERMEYER L
PFOERTSCH W
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 16 P. TABLES, ILLUS..
DOCUMENT NO.: UNIDO-ID/WG.305/25
SUBJECT: SMALL HYDROELECTRIC POWER PLANTS IN GERMANY FR - (1) ENERGY RESOURCES AND SUPPLY; NEED FOR USE OF RENEWABLE ENERGY SOURCES IN VIEW OF UNSOLVED PROBLEMS IN NUCLEAR ENERGY; RIVER POWER POTENTIAL; HISTORICAL DEVELOPMENT OF TURBINES; IMPORTANCE OF MINI HYDRO-POWER PLANTS; POSITIVE ECONOMIC ASPECTS AND EFFICIENCY (2) LOCATION AND PLANNING; BUILDING CONSTRUCTION (/DAM/S, WEIRS); /GENERATORS/; OPERATION OF POWER STATIONS

0226

TITLE: Mini-Hydropower Stations. (A Manual for Decision Makers)
CORPORATE NAME: UNIDO
OLADE (LATIN AMERICAN ENERGY ORGANIZATION).
SOURCE: Vienna, 1983. ix, 75 p. diagrams
DOCUMENT NO.: UNIDO-ID/SER.N/1
SERIES: Small Hydropower Series, No. 1
SUBJECT: Handbook on mini-hydroelectric power stations - definition and classification of such electric power stations; advantages and limitations of mini-hydropower generations; resources and demand; preinvestment studies; financing; construction and start-up; operation and maintenance and repair; training; required knowhow; project design

0227

TITLE: Mini-power stations - small hydropower 100-1500 kW
AUTHOR: Person, T.
SOURCE: Stockholm, Sweden, Swedish Power Association (VAST), 1980. 29 p.
SUBJECT: Mini-Hydroelectric power
Standardized /axial flow turbines/ manufactured in Sweden. Restoration and /renovation/ of small hydro power stations

0228

TITLE: Modern small-scale hydroturbines
AUTHOR: Romcke, Nils H.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, pp. 764-76
SUBJECT: Mini-Hydroelectric power
Small-scale Francis and /tube turbines/, developed by Sorumsand Verksted A.S in Norway. /Francis turbines/ incorporate 12 hydraulic configurations, use /lubrication/-free bearings, and are horizontally arranged. The S-shaped tubular turbines use water-lubricated rubber bearings and fixed guide vanes and runner blades to achieve various speeds. Costs and applications 0229

TITLE: MODERN WATER TURBINE TECHNOLOGY FOR SMALL POWER STATIONS.
AUTHOR: SALOVAARA T
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 13 P. GRAPHS, DIAGRAMS.,
DOCUMENT NO.: UNIDO-ID/WG.305/31
SUBJECT: TURBINES TECHNOLOGY FOR SMALL HYDROELECTRIC POWER STATIONS IN FINLAND - (1) HYDRAULIC MACHINERY AND EQUIPMENT FOR SMALL POWER STATIONS (2) HYDRAULIC CHARACTERISTICS AND CHOICE OF TURBINE TYPES; MECHANICAL PROPERTIES (3) GOVERNING AND /CONTROL MECHANISMS/; USE OF GEAR AS SPEED INCREASER (D) /RENOVATION/ OF OLD STATIONS (EQUIPMENT REPLACEMENT) 0230

TITLE: Modernization of a small hydro plant
AUTHOR: Eberhardt, A.
SOURCE:
SERIES: Civil engineering (New York), September 1977, v. 47, no. 7, pp. 60-61
SUBJECT: Mini-Hydroelectric power
/Renovation/ of the Cornell hydro-electric plant in Northern Wisconsin. /Forced-air cooled generators/. Costs savings through simplified turbines, consisting of a fixed blade wheel and a shaft rotating inside a steel conduit; and purchase of a small mobile crane instead of a conventional powerhouse crane 0231

TITLE: Modular hydrodam: concept definition study
CORPORATE NAME: GILBERT ASSOCIATES, INC..
SOURCE: Washington, DC, USA, US Dept. of Energy, 1981. 144 p.
SUBJECT: Mini-Hydroelectric power
Potential for developing economical new ultra /low head/ (6-10 feet) sites using a Modular Hydro/dam/ - a /prefabricated installation/ which can be assembled in the manufacturers shop, broken down into four pieces, and shipped to the site. Other aspects: /tube turbines/ and /crossflow turbines/; modularized components; cable support system; construction in both wet and dry 0232

TITLE: MULTI-PURPOSE DEVELOPMENT OF THE JINJIANG BASIN.
AUTHOR: LIU RUDONG
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 11 p. tables, map, diagrams..
DOCUMENT NO.: UNIDO-ID/WG.329/22
SUBJECT: Development of the Jinjiang River Basin in China, with special reference to hydroelectric power - (1) geographic and topographic aspects; water resources; construction of 137 small hydro-electric stations; power output; water locks; civil engineering (2) multipurpose development of the basin: water management, rural development, irrigation. 0233

TITLE: Multipurpose planning of small hydro projects: an opportunity assessment approach
AUTHOR: Kaufman, Jennifer L.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June 1981
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, pp. 472-84
SUBJECT: Mini-Hydroelectric power
Factors involved in planning. Importance of determining environmental effects of construction and operation; resolving conflicts between developers and other users of a water resource 0234

TITLE: National Conference on Renewable Energy Technologies
CONFERENCE: National Conference on Renewable Energy Technologies, Honolulu, HI, USA, 7 December 1980
CORPORATE NAME: US DEPT. OF ENERGY.
SOURCE: Washington, DC, USA. US Dept. of Energy, 1980. 636 p.
DOCUMENT NO.: CONF-801203
SUBJECT: Mini-Hydroelectric power
226 papers, some devoted to small-scale hydroelectric power plants, regional analysis, planning 0235

TITLE: NEED FOR AN INTEGRATED APPROACH IN RURAL ELECTRIFICATION IN NEPAL.
AUTHOR: MOLINARI P
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 13 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/41
SUBJECT: SMALL HYDROELECTRIC POWER PLANTS FOR RURAL ELECTRIFICATION IN NEPAL - (1) ENVIRONMENTAL CONSIDERATIONS; WOOD USE FOR COOKING; POWER SUPPLY IN RURAL AREAS THROUGH HARNESSING PLENTIFUL WATER RESOURCES; SMALL HYDRO STATIONS AT DHANKUTA AND SURKHET (2) SURVEY INDICATIONS OF /ENERGY DEMAND/ OF COTTAGE INDUSTRY AND SMALL AGRI-PRODUCT PROCESSING, IRRIGATION, WATER HEATING 0236

TITLE: Nepal: Private-sector approach to implementing micro-hydropower schemes. A case study
AUTHOR: Inversin, Allen R.
CORPORATE NAME: National Rural Electric Cooperative Association. Small Decentralized Hydropower (SDH) Program.
SOURCE: Washington, DC, USA, NRECA, 1982. 26 p.
SUBJECT: Mini-Hydroelectric power: Case study 0237

TITLE: Net energy: results for small-scale hydroelectric power and summary of existing analyses

AUTHOR: Gilliland, M.W.
Klopatek, J.M.
Hildebrand, S.G.

SOURCE:

SERIES: Energy (Oxford, UK), 10 October 1981, v. 6, no. 10, pp. 1029 (11)

SUBJECT: Mini-Hydroelectric power
Net energy ratio of most small-scale hydroelectric pilot projects, in range of 10 to 12:1, compare favorably with ratios for thirteen other electricity technologies 0238

TITLE: New technologies for the development of micro hydro

CONFERENCE: Seminar-Workshop on the Exchange of Experience and Technology transfer on Mini Hydro electric Generation Units, Kathmandu, Nepal, 10-14 September 1979

CORPORATE NAME: INTERMEDIATE TECHNOLOGY DEVELOPMENT GROUP.

SOURCE: London, UK, ITDG, 1979. 16 p.

SUBJECT: Mini-Hydroelectric power
Costs savings through electronic /load control/. Economic aspects of micro-hydro electricity generation in Nepal 0239

TITLE: NORWEGIAN COUNTRY PAPER. (HYDROELECTRIC POWER).

AUTHOR: Vinjar, Asbjoern G.

CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979

CORPORATE NAME: UNIDO.

SOURCE: VIENNA, 1979. 4 P.,

DOCUMENT NO.: UNIDO-ID/WG.305/21

SUBJECT: HYDROELECTRIC POWER IN NORWAY - (1) ROLE OF WATER POWER IN ELECTRIFICATION; ELECTRIC POWER STATIONS; REVIVAL OF SMALL-SCALE STATIONS DUE TO RISING ENERGY PRICES; TOTAL RIVER WATER POWER POTENTIAL; /HYDROLOGY/CAL CONDITIONS; RURAL DEVELOPMENT ASPECTS (2) OUTLINES THREE NORWEGIAN PAPERS PRESENTED TO THE SEMINAR 0240

TITLE: On the centralization of hydroelectric power station maintainance
AUTHOR: Kozhenvikov, N.N.
SOURCE:
SERIES: Stantsii (USSR), January 1978, no. 1, pp. 52-57
SUBJECT: Mini-Hydroelectric power
Most effective is a cascade of stations along a single river, with a single maintenance and repair organization for the cascade. Medium or small stations would require groups of neighboring stations 0241

TITLE: On the control of low-head hydrogenerating plants
AUTHOR: Frick, P.A.
Alexander, G.C.
CONFERENCE: International Conference of Cybernetic Societies, Denver, CO, USA, 8-10 October 1979
SOURCE: New York, NY, USA, IEEE, 1979.
DOCUMENT NO.: IEEE/79CH1424-1 SMC
SERIES: Proceedings, pp-559-65
SUBJECT: Mini-Hydroelectric power
/Flow control/ technology reviewed. To control (limit) head variations in plants with /low head/ (20-60 feet), a special class of propeller ype turbines, known as "/tube turbines/" o "/bulb turbines/", are normally employed to exploit fully the available head. Flow range bandwidth defined 0242

TITLE: One kW river generator
CORPORATE NAME: VOLUNTEERS IN TECHNICAL ASSISTANCE. VITA
SOURCE: Arlington, VA, USA, VITA, 1971.
SERIES: A booklet in Village Technology Plans
SUBJECT: Mini-Hydroelectric power: /generators/ 0243

TITLE: Operational problems of low head hydroplants
AUTHOR: Rao, C.S.
Thapar, B.
CONFERENCE: World Congress on Water Resources
SOURCE: New Delhi, India, International Water Resources Association, 1975.
SERIES: Proceedings, v. 1, pp. 41-49
SUBJECT: Mini-Hydroelectric power
/Thyristor/ controlled /automatic braking/ device, used to improve transient stability limits in /low head/ plants, is prone to create auto-oscillatory conditions during small disturbances in the system. Recommends a dead-zone for the thyristor bridge regulator or improved self-damping of the /generators/ 0244

TITLE: Ossberger cross-flow turbines
AUTHOR: Stapenhorst, F.W.E.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE: diagrams and photos
SERIES: Proceedings, pp. 142-52
SUBJECT: Mini-Hydroelectric power
Small, /impulse type turbines/ (/crossflow turbines/) produced by the /Ossberger Turbines/ Company of West Germany. Cross-flow of the water cleans the runner blades of debris. Suitable for /low head/s as low as three feet, or heads as high as several hundred feet 0245

TITLE: Pakistan: Villager-implemented micro-hydropower schemes. A case study
AUTHOR: Inversin, Allen R.
CORPORATE NAME: National Rural Electric Cooperative Association. Small Decentralized Hydropower (SDH) Program.
SOURCE: Washington, DC, USA, NRECA, 1983. 17 p.
SUBJECT: Mini-Hydroelectric power: Case study 0246

TITLE: PANAMA'S MINI-HYDROELECTRIC PLANTS PROGRAMME.
AUTHOR: PASCAL J
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 12 P. DIAGRAMS..
DOCUMENT NO.: UNIDO-ID/WG.305/15
SUBJECT: DEVELOPMENT OF SMALL HYDROELECTRIC POWER PLANTS IN PANAMA - PRESENT ELECTRIC POWER SUPPLY; GOVERNMENT MINI-HYDRO-PLANT PROGRAMME FOR RURAL DEVELOPMENT; FINANCING WITH THE HELP OF IDB AND US AID; CURRENT STATUS OF MHP PROJECTS (TWO UNDER CONSTRUCTION, FIVE UNDER STUDY) 0247

TITLE: Perfiles preliminares de microcentrales hidraulicas
CORPORATE NAME: INSTITUTO NACIONAL DE ELECTRIFICACION RURAL.
SOURCE: La Paz, Bolivia, Ministeriom de Energia e Hidrocarburos. 9 p.
SUBJECT: Mini-Hydroelectric power planning - Bolivia
Three mini-hydro project outlines with: local population to be served; objectives; installed capacity; estimated investment costs 0248

TITLE: PHILIPPINES PROPOSAL FOR THE MANAGEMENT OF THE REGIONAL CENTRE IN SMALL/MINI HYDRO POWER GENERATION.
AUTHOR: Santos, Zenaida A.
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 5 p.,
DOCUMENT NO.: UNIDO-ID/WG.376/1
SUBJECT: Proposal (based on experience in the Philippines) on management of a regional development centre for small hydroelectric power generation in the ESCAP area - (1) MHG programme in the Philippines (2) possible activities within a regional network (3) research on /design/ for power stations, /hydrology/, power plant optimization (4) training (5) management and operation of the centre. 0249

TITLE: Phillips hydroelectric project: feasibility study. Final report
CORPORATE NAME: DEVELOPMENT AND RESOURCES CORPORATION.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 164 p.
DOCUMENT NO.: NTIS:DOE/ID/01782/T1
SUBJECT: Mini-Hydroelectric power: preinvestment study Existing facility, unused since 1956, is appraised and installation of new hydroelectric turbine-generating units examined. Six alternatives are studied, involving various manufacturers of turbine generating equipment, and methods of marketing the power and energy. Potential energy range from 785,000 to 2,096,000 kWh a year. 0250

TITLE: Piqua Hydroelectric Project. Feasibility assessment report
AUTHOR: Beck, R.W.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 89 p.
DOCUMENT NO.: NTIS:DOE/ID/017801-1
SUBJECT: From studying the site, projected concepts, and costs, it was determined that this 400 kW project on the Great Miami River in Ohio could not be justified economically. Preinvestment study Mini-Hydroelectric power 0251

TITLE: PLANNING AND DEVELOPMENT OF MINOR-SIZED HYDROELECTRIC PROJECTS.
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO
ESCAP.
SOURCE: VIENNA, 1980. 27 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/34
SUBJECT: SMALL HYDROELECTRIC POWER PROJECTS - (1) HISTORY OF POWER SUPPLY FROM MOVING WATER (2) HYDROELECTRIC POWER STATIONS; (3) PREINVESTMENT STUDYS: /ELECTRIC POWER MARKET/ SURVEY; FIELD EVALUATION (PROJECT SIZE, TOPOGRAPHY, /HYDROLOGY/, ETC.) (4) PROJECT DESIGN, CIVIL ENGINEERING; MECHANICAL AND ELECTRICAL EQUIPMENT, TURBINES, /GENERATORS/; POWER DISTRIBUTION (5) PROJECT IMPLEMENTATION, OPERATION AND MAINTENANCE AND REPAIR, FINANCIAL CONTROL, COSTS 0252

TITLE: Planning, design, and construction of Ban Santi mini-hydropower of EGAT
AUTHOR: Mahatharadol, B.
CONFERENCE: Conference on Electric Power Supply Industry, 4th, Bangkok, Thailand, 22-26 November 1982. Proceedings, no. 2
SOURCE:
SERIES: Proceedings, no. 2
SUBJECT: Mini-hydroelectric power plant design and construction 0253

TITLE: Planning for small hydro development
AUTHOR: Adams, B.H.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June 1981
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1981.
SERIES: Proceedings, v. 2, pp. 1465 ff
SUBJECT: Mini-Hydroelectric power planning 0254

TITLE: PLANNING FOR THE SMALL HYDRO-POWER STATION AND NETWORK IN TUNGCHENG COUNTY, HUBEI PROVINCE, CHINA.
AUTHOR: HE CHENGJI
PENG NIANGXIANG
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 9 p. tables, maps.,
DOCUMENT NO.: UNIDO-ID/WG.329/29
SUBJECT: Planning for a small hydroelectric power station and network in China - Electric power distribution, costs, water management
0255

TITLE: Planning of small electric systems and mini hydropower plants
AUTHOR: Puccinelli, Humberto Egoavil
CONFERENCE: Small Hydroelectric Powerplants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 290-308
SUBJECT: Mini-Hydroelectric power planning
0256

TITLE: Plate blade application for the small hydro-turbine runners
AUTHOR: Kercan, V.
Bizjak, L
CONFERENCE: American Society of Mechanical Engineers (ASME) Winter Annual Meeting, Chicago, Il, USA, 16-21 November 1980
SOURCE: New York, NY, USA, ASME, 1980.
SERIES: Proceedings. pp. 41-49
SUBJECT: Mini-Hydroelectric power
Test results suggesting the use of simplified blades in /Francis turbines/ and axial type turbines used in small hydro-power units 0257

TITLE: POLICY, ECONOMIC AND TECHNOLOGICAL ASPECTS OF MINI-HYDROELECTRIC GENERATION IN DEVELOPING COUNTRIES. WORKING GROUPS REPORTS, KATHMANDU DECLARATION.

CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979

CORPORATE NAME: UNIDO.

SOURCE: VIENNA, 1980. 19 P.,

DOCUMENT NO.: UNIDO-UNIDO/IS.182

SUBJECT: REPORTS FROM A MEETING ON MINI-HYDROELECTRIC POWER GENERATION IN DEVELOPING COUNTRIES - (1) GROUP REPORTS REGARDING (a) TECHNOLOGY: RESEARCH AND DEVELOPMENT, INFORMATION NEEDS, TECHNOLOGY TRANSFER, TRAINING, STANDARDIZATION (b) ECONOMIC ASPECTS: COSTS OF DIFFERENT MHG SYSTEMS; ECONOMICS OF VARIOUS GENERATION SYSTEMS; COST REDUCTION, /ENERGY DEMAND/; SOCIAL ASPECTS (c) ECONOMIC POLICY ASPECTS AND INSTITUTIONAL FRAMEWORK (2) 'KATHMANDU DECLARATION' 0258

TITLE: Potencial hidroelectrico - alternativa energetica y desafio industrial y financierto para America Latina

AUTHOR: Indacochea, E., et al

CONFERENCE: Regional Technical Meeting on Hydroenergy, Quito, Ecuador, February 1981

SOURCE: Quito, Ecuador, OLADE, 1981. 41 p.

SUBJECT: Mini-Hydroelectric power
A Latin American hydroenergy development strategy, analysing related aspects - planning, project studies, engineering technology and equipment, institutional and operational schemes, financing, tariffs, and human resources. Mini-hydro generation is seen within the context of hydro energy development in general 0259

TITLE: POTENTIAL AND PROSPECTS OF DEVELOPING MINI-HYDROELECTRIC GENERATION IN ZAMBIA.

AUTHOR: Chanda, J. Kalolo

CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979

CORPORATE NAME: UNIDO.

SOURCE: VIENNA, 1979. 6 P.,

DOCUMENT NO.: UNIDO-ID/WG.305/6

SUBJECT: DEVELOPMENT OF SMALL HYDROELECTRIC POWER GENERATION IN ZAMBIA - KARIBA DAM, ZAMBEZI, KAFUE AND OTHER RIVERS; DEVELOPMENT POTENTIAL AND PROSPECTS OF MINI GENERATION SCHEMES; /HYDROLOGY/ RESOURCES; PROBLEMS AND CONSTRAINTS; ELECTRIC POWER DISTRIBUTION, RURAL DEVELOPMENT, DECENTRALIZATION; TECHNICAL ASSISTANCE NEEDS 0260

TITLE: Potential hydroelectric power, Mora Canal drop. Final report
AUTHOR: Willer, David C.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1978. 114 p.
DOCUMENT NO.: NTIS:DOE/ID/1760-1
SUBJECT: Mini-Hydroelectric power: preinvestment study Recommends a 1900 kW unit to generate 8,113,000 kWh per year 0261

TITLE: Potential hydroelectric power upriver dam: city of Spokane Department of Utilities Water Division
CORPORATE NAME: TUDOR ENGINEERING COMPANY.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 112 p.
DOCUMENT NO.: NTIS:DOE/ID/01801-1
SUBJECT: Mini-Hydroelectric power Proposes uprating existing /power house/ from 3.9 to 4.5 Mw and adding two 4.5 Mw turbines to provide additional 62.3 million kW annually (/renovation/) 0262

TITLE: Potential use of small dams to produce power for low-income communities
AUTHOR: Allen, Mary M.
SOURCE: Washington, DC, USA, Community Services Administration, Energy Program, 1978. 220 p.
DOCUMENT NO.: NTIS:PB-292 745/7ST
SUBJECT: Mini-Hydroelectric power preinvestment study Issues involved in estimating potential contribution of hydropower to the energy supply: physical characteristics; environmental and safety considerations; institutional constraints; economic issues; current governmental programs 0263

TITLE: Power from the streams
AUTHOR: Kassler, Helene S.
SOURCE:
SERIES: Solar age, July 1978, v. 3, no. 7, pp. 16 (4)
SUBJECT: Mini-Hydroelectric power preinvestment study Hydroelectric potential at /existing facilities/ (small /dam/s) surveyed. Difficulties encountered in several attempts to put small hydro plants back on line (/renovation/) 0264

TITLE: Practical hydrology for hydroplant planning and design
AUTHOR: Dixon, John H.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings: pp. 210-18
SUBJECT: Mini-Hydroelectric power
Development and application of /hydrology/ data in design of hydroelectric plants. Generalized flow duration curve for estimating energy potential. Computer programs to calculate daily energy production based on available head, turbines efficiencies, and flow. /Flood control/ factors 0265

TITLE: Practical micro-hydro: a case study of a demonstration and stream appraisal project in the mountains of North Carolina
AUTHOR: Ayers, Harvard G.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June 1981
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, pp. 728-40
SUBJECT: Mini-Hydroelectric power
Definitions: Differences between micro-hydro and small-scale hydro-power depends on extent of head and discharge. Micro-hydro can obtain its head only from natural topographic drops, and is therefore limited to mountainous areas. North Carolina USA ideal in this respect 0266

TITLE: Preliminary Layout and Design of Civil Works
AUTHOR: Inversin, Allen R.
CONFERENCE: Small Hydropower in Africa Workshop, Mbabane, Swaziland
SOURCE: Washington, DC, USA, NRECA, n.d.. 20 p. illus.
SUBJECT: Mini-Hydroelectric power
Provides information for efficient design; and presents brief case studys from Burundi, Indonesia, Liberia and Papua New Guinea 0267

TITLE: PRELIMINARY STUDY OF OLADE'S REGIONAL PROGRAMME ON SMALL HYDROELECTRIC PLANTS FOR LATIN AMERICA: SCOPE, CLASSIFICATION AND STRATEGY OF DEVELOPMENT.

CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979

CORPORATE NAME: UNIDO
OLADE (LATIN AMERICAN ENERGY ORGANIZATION).

SOURCE: VIENNA, 1980. 71 P. DIAGRAMS..

DOCUMENT NO.: UNIDO-ID/WG.305/30

SUBJECT: REGIONAL PLANNING FOR SMALL HYDROELECTRIC POWER GENERATION IN LATIN AMERICA - (1) FRAME OF REFERENCE IS NATIONAL LEVEL PROGRAMMING (2.a) ENERGY SECTOR; WATER POWER AS AN ALTERNATE ENERGY SOURCE; RURAL SOCIAL ASPECTS AND ECONOMIC ASPECTS; TECHNOLOGY FOR PRODUCTION OF MACHINERY; COSTS (b) DEFINITION AND CLASSIFICATION OF SMALL HYDROELECTRIC STATIONS; TURBINES (c) DEVELOPMENT POLICIES. PLANNING, PROJECT IMPLEMENTATION; OPERATION, COSTS, FINANCING 0268

TITLE: Presentations of speakers

AUTHOR: Henry, L.F.
Nolt, R.
Rohrbaugh, R.L.
Webb, D.R.
Wells, J.

CONFERENCE: 1982 Service/Maintenance Seminar, York, PA, USA, 12-14 October 1982

SOURCE: York, PA, USA, Allis-Chalmers Corporation, 1982.

SUBJECT: Mini-Hydroelectric power
Papers presented at a seminar on service and maintenance of equipment and turbines runners; cavitation theory; index testing and signature analysis; welding procedures 0269

TITLE: PROBLEMS ENCOUNTERED IN DESIGNING AND PRODUCING SMALL SCALE WATER TURBINES IN NEPAL.
AUTHOR: METZLER R
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 7 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/26
SUBJECT: PROBLEMS IN /DESIGN/ AND PRODUCTION OF SMALL-SCALE TURBINES FOR HYDROELECTRIC POWER UNITS IN NEPAL - INCREASING ENERGY PROBLEMS NECESSITATE DEVELOPMENT OF WATER POWER; TYPE OF /ENERGY DEMAND/; APPROPRIATE TECHNOLOGY; PLANNING STAGE; THE TECHNOLOGY TRANSFER PROBLEM; NEED FOR DEVELOPMENT OF NATIONAL KNOWHOW AND SKILLS AS ALTERNATIVE TO PROBLEMATIC TRANSFER 0270

TITLE: Proceedings
AUTHOR: Khan, M.I.
CONFERENCE: Comples/UPM International Conference on Heliotechnique and Development, Tehran, Iran, 2-6 November 1975
SOURCE:
SERIES: v. 2, pp. 576-7
SUBJECT: Mini-Hydroelectric power
Small hydroelectric power stations to tap hundreds of streams to help fill Pakistan's energy supply-/energy demand/ gap 0271

TITLE: Proceedings
AUTHOR: Smith, Peter E. (ed.)
CONFERENCE: Applying Research to Hydraulic Practice, Jackson, MISS, USA, 17-20 August 1982
SOURCE: New York, NY, USA, ASCE, 1982. 732 p.
SUBJECT: Mini-Hydroelectric power
Papers dealing with small hydroelectric power plants 0272

TITLE: Producing your own power; how to make nature's energy sources work for you
AUTHOR: Stoner, C.H., ed.
SOURCE: New York, USA, Random House, Vintage, 1975. pp. 61-102
SUBJECT: Mini-Hydroelectric power 0273

TITLE: Program for small hydroelectric powerplants: Electroperu
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June, 1981
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, v. 2, pp. 1137-43
SUBJECT: Mini-Hydroelectric power
Social aspects and political effects of Peru's small-scale hydroelectric power development program, initiated in 1979. Training and organizing of personnel to implement projects and administer power stations 0274

TITLE: PROGRESS IN SMALL HYDRO-POWER DEVELOPMENT IN SIERRA LEONE.
AUTHOR: Kamara, D.L.B.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 7 p. table.,
DOCUMENT NO.: UNIDO-ID/WG.403/20
SUBJECT: Small hydroelectric power development in Sierra Leone - (1) plans for replacing existing diesel plants; site assessments (2) five current hydroelectric projects (3) economic analysis of small projects; costs, financial aspects 0275

TITLE: PROJECT OF MICRO-HYDRO GENERATION UNITS IN COLOMBIA.
AUTHOR: GAMBOA FAJARDO H
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 4 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/42
SUBJECT: SMALL HYDROELECTRIC POWER GENERATION UNITS FOR COLOMBIA - (1) A PROJECT FOR RURAL POWER SUPPLY (2) LOCATION AND EXTENT OF PROGRAMME; CRITERIA OF /SITE SELECTION/; PROGRAMME CHARACTERISTICS AND PROJECT IMPLEMENTATION; SOCIAL ASPECTS AND ECONOMIC ASPECTS 0276

TITLE: PROMOTION OF LOCAL DESIGN AND MANUFACTURE OF MINI HYDROELECTRIC EQUIPMENT IN THE PHILIPPINES.
AUTHOR: del Rosario, Juan Miguel V.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 20 p. tables.,
DOCUMENT NO.: UNIDO-ID/WG.403/12
SUBJECT: Mini hydroelectric power development in the Philippines - (1) market for mini-hydro electric power, the National Electrification Administration; private sector; the ASEAN market (2) domestic production programme: rationale; electric power stations, locally manufactured equipment; benefits; existing local power plant installations; technology transfer; problem areas in implementation (3) required financing and government policy 0277

TITLE: PROMOTION OF LOCAL DESIGN AND MANUFACTURING OF EQUIPMENT AND AUXILIARIES.
AUTHOR: Sinding, H.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 3 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/27
SUBJECT: Local design and domestic production of equipment for hydroelectric power plants - (1) market size and development; geographical limits, export possibilities, inland demand (2) local workshops; maintenance, assembling and testing; programme for investment and training; (3) balance of payments, raw materials; financial aspects (4) possible support from industry in Norway 0278

TITLE: PROMOTION OF LOCAL INITIATIVES IN SMALL HYDRO-POWER DEVELOPMENT IN YUGOSLAVIA.
AUTHOR: Bekic, Darko
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 8 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/19
SUBJECT: Regional initiatives in development of small hydroelectric power in Yugoslavia - (1) problem of the size of hydro-power units (2) the Yugoslav approach: social and economic aspects, rivers, water flows suitable for the installation of electric power stations (3) centralization versus decentralization; regional planning (4) domestic production of turbines and machinery (5) private and public sector cooperation (6) some technological obstacles; costs 0279

TITLE: Proposed redevelopment Kimberly Clark Corporation Vulcan hydroelectric project on the Fox River at Appleton Wisconsin
CORPORATE NAME: MEAD AND HUNT.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 45 p.
DOCUMENT NO.: NTIS:DOE/ID/1775-1
SUBJECT: Mini-Hydroelectric power preinvestment study Feasibility study including available water power, plant design, market for generated power, environmental and regulatory aspects 0280

TITLE: PROSPECT OF MINI-HYDRO-POWER DEVELOPMENT IN BANGLADESH.
AUTHOR: CHOUDHURI W
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 8 P. TABLE, GRAPH.,
DOCUMENT NO.: UNIDO-ID/WG.305/3
SUBJECT: MINI-HYDROELECTRIC POWER IN BANGLADESH - CLIMATE, /HYDROLOGY/; EXISTING HYDROELECTRIC POWER STATION (AT KAPTAI); PRESENT SYSTEM OF POWER SUPPLY AND INSTALLED CAPACITY; ENERGY DEVELOPMENT STRATEGY; LOAD DEVELOPMENT; REGIONS TO BE SURVEYED FOR POTENTIAL MINI-HYDRO DEVELOPMENT. MAPS 0281

TITLE: Prospect of mini-hydropower development in the Kingdom of Tonga
AUTHOR: Bernabe, J.C.
CONFERENCE: Seminar-workshop on the Exchange of Experiences and Technology Transfer on Mini-hydro Electric Generation Units, Kathmandu, Nepal, 10-14 September 1979
SOURCE: Kathmandu, Nepal, Small Hydel Development Board, 1979.
SUBJECT: Mini-Hydroelectric power in Tonga 0282

TITLE: PROSPECT OF MINI-HYDROPOWER DEVELOPMENT IN THE KINGDOM OF TONGA.
AUTHOR: BERNABE JC
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL., 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 7 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/28
SUBJECT: SMALL HYDROELECTRIC POWER GENERATION IN TONGA - (1) BACKGROUND; ELECTRIC POWER SUPPLY BASED ON IMPORTED FUEL (DIESEL ENGINES); POSSIBILITY OF A HYDROELECTRIC POWER STATION ON THE ISLAND OF 'EUA; NEED OF PREINVESTMENT STUDY FOR PILOT PROJECT; PROBLEMS OF KNOWHOW, DESIGN, FINANCING, ETC. (2) REQUIRED RESEARCH AND TRAINING 0283

TITLE: PROSPECT OF SMALL-SCALE HYDRO POWER DEVELOPMENT IN BANGLADESH.
AUTHOR: MAHMOOD STS
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 19 p. maps, diagrams,
DOCUMENT NO.: UNIDO-ID/WG.329/7
SUBJECT: Prospects of small-scale hydroelectric power generation in Bangladesh - (1) geography, topography, climate, rainfall, /hydrology/ (2) the hydroelectric potential; various projects, including small rivers 0284

AUTHOR: Radler, Siegfried (ed.)
CONFERENCE: Symposium on Project Design and Installation of Small Hydro Power Plants, Vienna, 29 June 1981-1 July 1981
SOURCE: Vienna, Austria, Institut fuer Wasserwirtschaft, Universitaet fuer Bodenkultur, 1981. 256 p., charts and diagrams
SUBJECT: Mini-Hydroelectric power
Determining hydro potential. Planning. Geological and geotechnical studies. /Hydrology/ analysis. /Gates/ systems. Sand traps and flushing possibilities. Water conveyance structures. Problems of high-head schemes. Small hydro turbines. Electrical equipment. Evaluating economic aspects. Case studys from East-Tirol, Austria, and Nepal 0285

TITLE: Reactivation or expansion of Hotel Baker hydro plant
CORPORATE NAME: HARZA ENGINEERING COMPANY.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 164 p.
DOCUMENT NO.: NTIS:DOE/ID/01781-1
SUBJECT: Mini-Hydroelectric power
Concludes that /renovation/ of this 1928 plant, while technically feasible, only marginally attractive economically 0286

TITLE: Real time control of hydroelectric plants
AUTHOR: Bjork, D.R.
Marcotte, K.E.
Shrauger, N.K.
Starr, D.C. Wilkins, A.J.
SOURCE: New York, NY, USA, IEEE, 1977.
DOCUMENT NO.: IEEE Paper A 77 742-0
SUBJECT: Mini-Hydroelectric power
Automation of two hydroelectric plants using real time /digital process control/lers. Includes digital controlled /voltage regulation/ and var balance, unit synchronization, and /load control/. A detailed description of the digital system 0287

TITLE: Reconnaissance evaluation of small, low-head hydroelectric installations: Final report, July 1980
AUTHOR: Burrier, Horace E.
Jacobs, Nelson J.
SOURCE: San Fransisco, CA, USA, Tudor Engineering Company, 1980. 407 p.
SUBJECT: Mini-Hydroelectric power
Guidance for preparing studies for various types of small low-head hydroelectric developments (not exceeding 15,000 kW and a maximum head of 65.6 feet) with different site conditions. Including equipment and cost data required to make the evaluation. Reviewing financial analysis and methods of financing small developments. Three examples of applying the methodology are presented
0288

TITLE: Reconnaissance feasibility study: hydroelectric potential on Lowell Creek
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 41 p.
DOCUMENT NO.: NTIS:DOE/ID/1768-1
SUBJECT: Mini-Hydroelectric power preinvestment study
Despite apparently favorable physical characteristics of the area, none of three approaches was considered feasible due to high costs of energy, winter freeze-ups, and excessive rock sediment carried by the stream
0289

TITLE: Redevelopment of older hydroelectric generating plants: a three-phase approach
AUTHOR: Trott, Alfred G.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, pp. 154-57
SUBJECT: Mini-Hydroelectric power
Three steps in evaluating hydroplant /renovation/ and uprating: 1. accumulation of information for /site selection/; 2. preinvestment studys; 3. engineering and /design/ investigations
0290

TITLE: Redevelopment of rivers in Japan
AUTHOR: Susuki, Takamura
CONFERENCE: World Energy Conference, 8th, Bucharest, Romania, 28 June-2 July 1971
SOURCE: Bucharest, Romania, National Committee of the World Energy Conference,
SERIES: Transactions, v. 5, paper 3, 2-135, 20 p.
SUBJECT: Mini-hydroelectric power
Small scale hydroelectric power plants for /renovation/ or elimination with a view to improving multipurpose utilization of river water 0291

TITLE: REGIONAL NETWORK SYSTEM FOR SHG-MHG ACTIVITIES FOR MEMBER COUNTRIES OF ESCAP REGION.
AUTHOR: Zainal Abidin, M.Z.
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 16 p. diagram.,
DOCUMENT NO.: UNIDO-ID/WG.376/6
SUBJECT: Regional cooperation in Asia and the Pacific in a network for small hydroelectric power generation - (1) organizing such a system: preinvestment studys, /design/, construction, turbines manufacture, management, research, maintenance and repair (2) a Regional Network Centre to act as a secretariat (3) standardization, training 0292

TITLE: REGIONAL NETWORK SYSTEM ON MHG-SHG TO PROMOTE MHG AND APPLICATION IN DEVELOPING COUNTRIES.
AUTHOR: Deodas, T.A.
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 8 p.,
DOCUMENT NO.: UNIDO-ID/WG.376/7
SUBJECT: Proposal for a regional network system promoting small-scale hydroelectric power generation (MHG) in Asian developing countries - (1) lead agency in each country; identification of country-specific conditions; preparation of guidelines; standardization; local industries; updating of technology (2) needs at national level for research and training in the field of MHG (3) establishment of a regional research centre in Hangzhou, China 0293

TITLE: Regulador de velocidad electrico electronico de turbinas hidraulicas para pequenas centrales hidroelectricas
AUTHOR: Suarez, L.
CONFERENCE: Latin American Seminar on Small Hydro Power Stations, 1st, Girardot, Colombia, November 1980
SOURCE: Quito, Ecuador, OLADE. 1980. 6 p.
SERIES: Boletin energetico no. 16
SUBJECT: Mini-Hydroelectric power
Electric-electronic /speed control/ regulators for water turbines which maintains turbine speed by means of an electronic frequency sensor, admitting water according to load variations (/flow control/). This proposed as alternative to systems which maintain full load at the turbine and so waste water 0294

TITLE: Renewable energy sources for the world's poor: a review of current international development assistance programs
AUTHOR: Ashworth, J.H.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 81 p.
SUBJECT: Mini-Hydroelectric power
Funding assistance for testing and use of renewable energy sources in the Third World; small scale hydroelectric generation among others. International coordination and information sharing on foreign assistance projects. Specific development projects 0295

TITLE: REPORT FORMAT OUTLINE FOR FEASIBILITY STUDIES: MINI-HYDRO POWER GENERATION PROJECTS AND PROJECT STUDY GUIDELINES (AS USED IN THE PHILIPPINES).
AUTHOR: Santos, Zenaida A.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 15 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/11
SUBJECT: Preparation of feasibility studies for small hydroelectric power development in the Philippines - (1) project description and general information; topography, climate (2) environmental and site assessment; land and water rights (3) /hydrology/; surface geology (4) electric power and energy demand (5) planning; capital investment estimates; operations, maintenance and repair costs (6) financial aspects, economic aspects 0296

TITLE: Report of assessment of small hydroelectric development at existing facilities
CORPORATE NAME: WATER AND POWER RESOURCES SERVICE.
SOURCE: Denver, CO, USA, Engineering and Research Center, 1980. 420 p.
DOCUMENT NO.: NTIS:PB81-104663
SUBJECT: Mini-Hydroelectric power preinvestment studys Of 159 potential development sites, 46 were found economically feasible. These were screened for economic aspects, environmental, and social aspects; 37 were judged acceptable
0297

TITLE: Report of the Ad Hoc Expert Group on Financing of New and Renewable Sources of Energy
CONFERENCE: United Nations New and Renewable Sources of Energy Conference, Nairobi, Kenya, 10-21 August, 1981
CORPORATE NAME: UNITED NATIONS.
SOURCE: New York, NY, USA, United Nations, 1981. 42 p.
SUBJECT: Mini-Hydroelectric power
Three case studys of shifting from oil and gas to renewble energy resources, including small hydroelectric power. Methodology for quantitatively assessing /energy demand/ in developing countries. Sources of financing. Planning
0298

TITLE: Report of the mission to evaluate small hydro-power sites in Jamaica, 7-19 December 1980
AUTHOR: Bradbury, J.J.C.
Seethapathy, A.P.
CORPORATE NAME: UN DEPT. OF TECHNICAL CO-OPERATION FOR DEVELOPMENT.
SOURCE: New York, United Nations, April 1981. 14 p.
SUBJECT: Mini-Hydroelectric power preinvestment study
Two proposals for construction of small hydropower plants. One - for conversion of excess hydraulic energy in 7 /water supply pipelines/ to electric power. Two - for constructing mini-hydropower plants for rural electrification. Need to accumulate water flow /hydrology/ data to identify appropriate sites
0299

TITLE: Report of the Technical Panel on Hydropower
AUTHOR: Baburin, B, et.al.
CORPORATE NAME: PREPARATORY COMMITTEE FOR THE UN CONFERENCE ON NEW AND RENEWABLE SOURCES OF ENERGY.
SOURCE: New York, NY, USA, United Nations, 56 p.
SUBJECT: Mini-Hydroelectric power
World hydro potential - perspectives and problems for promoting development. Various aspects of small-scale hydropower - economics, environmental, and social aspects
0300

TITLE: Report on a mission to Thailand, 8-15 May 1977
AUTHOR: Pourtauborde, J.E.
CORPORATE NAME: UN CENTRE FOR NATURAL RESOURCES, ENERGY AND TRANSPORT.
SOURCE: May 1977. 16 p.
SUBJECT: Mini-Hydroelectric power
Establishing a program to develop small hydropower /dam/s to substitute for diesel and thermal power plants in remote areas. Need for more technical personnel and equipment to produce preinvestment studys of potential sites
0301

TITLE: Report on a mission to Thailand, 25 November-18 December 1977
AUTHOR: Pourtauborde, J.E.
CORPORATE NAME: UN CENTRE FOR NATURAL RESOURCES, ENERGY AND TRANSPORT.
SOURCE: January 1978. 28 p.
SUBJECT: Mini-Hydroelectric power
Finalizing a project document requesting UNDP assistance in carrying out preinvestment studys of small hydropower /dam/s in the northern region of Thailand. Proposed dam sites described - characteristics, potential and estimated investment requirements. Project document included
0302

TITLE: REPORT. (SEMINAR ON TECHNOLOGY FOR MINI-HYDROELECTRIC POWER GENERATION, 1980).
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1981. 77 P.,
DOCUMENT NO.: UNIDO-ID/WG.329/4
SUBJECT: Report on a meeting and study tour (in China and Philippines) on technology for mini-hydroelectric power generation - (1) summarizes country papers from Bangladesh, Burma, Ethiopia, Egypt, Guyana, India, Jamaica, Kenya, Liberia, Malaysia, Nepal, Norway, Papua New Guinea, Peru, Romania, Thailand, Turkey, Yugoslavia and Zambia (2) discusses systems approach for MHG projects; domestic production of turbines, /generators/ and other equipment; construction; MHG for rural industry; costs reduction schemes 0303

TITLE: REPORT. (WORKSHOP ON DEVELOPMENT OF SMALL HYDROELECTRIC POWER).
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 107 p. Diagrams, maps.,
DOCUMENT NO.: UNIDO-ID/WG.403/33
SUBJECT: Report of a meeting on small hydroelectric power development - (1) gives summaries of papers presented (2) reports on plenary discussions and working groups (3) reports on site visits to SHP stations in Malaysia (4) turbines, transformer, enginering, choice of technology 0304

TITLE: Reports, ad hoc seminar on science and technology for the development of Nepal
CONFERENCE: Seminar-Workshop on the Exchange of Experiences and Technology Transfer on Mini-hydro Electric Generation Units, Kathmandu, Nepal, 10-14 September 1979
CORPORATE NAME: SOUTH EAST ASIA DEVELOPMENT ADVISORY GROUP.
SOURCE: New York, NY, USA, SEADAG, 1979.
SUBJECT: Mini-Hydroelectric power 0305

TITLE: Requerimientos y metodologias para la implementacion masiva de pequenas centrales hidroelectricas en Latino America

AUTHOR: Indacochea, E., et al

CONFERENCE: Latin American Seminar on Small Hydro Power Stations, 1st, Girardot, Colombia, November 1980

SOURCE: Quito, Ecuador, OLADE, 1980. 83 p.

SUBJECT: Mini-hydroelectric power

Outlook for massive implementation of small hydro power stations at national and regional levels in Latin America. Action projects for planning, studies and financing, construction, operation and maintenance, and manpower training. Forms for evaluating plants and projects, villages and resources

0306

TITLE: Resource survey of low-head hydroelectric potential at existing dams and proposed sites in the Pacific Northwest region: phase II

AUTHOR: Gladwell, John S.
Heitz, L.F.
Warnick, Calvin C.

SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 872 p.

DOCUMENT NO.: NTIS:DOE/RA/01691-2

SUBJECT: Mini-Hydroelectric power

Small hydro defined as a site with potential to produce power between 200 kW and 25 Mw with flows at the 50% exceedence level. Evaluation of transmission and load restraints, distance to nearest power lines, capacity of those lines, types of local market, and distances to nearest population centers

0307

TITLE: Revival of small-scale hydropower

AUTHOR: Gettings, T.L.
Wolf, Ray

SOURCE:

SERIES: Organic gardening and farming, June 1978, v. 25., no. 6, pp. 72(7)

SUBJECT: Mini-Hydroelectric power

Components and capabilities of small hydroelectric systems. Case study of a /low head/ system in Virginia. Sources on small-scale hydropower

0308

TITLE: Rivers of energy: the hydropower potential
AUTHOR: Duedney, Daniel
SOURCE: Washington, DC, USA, Worldwatch Institute, 1981. 55 p.
SUBJECT: Mini-Hydroelectric power
General overview of hydropower developments and potential throughout the world.
References 0309

TITLE: RURAL ELECTRIC POWER NETWORK PLANNING AND OPERATION IN DAYI COUNTY, SICHUAN PROVINCE.
AUTHOR: LU HUA
FANG XINLIN
FENG QISHAN
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 7 p. table, diagrams.,
DOCUMENT NO.: UNIDO-ID/WG.329/26
SUBJECT: Rural electrification and network planning in China, hydroelectric power - (1) need for exploitation of local resources for promotion of rural development; use of small electric power stations (2) the rural electric power distribution network in Dayi County; planning and operation; development potential 0310

TITLE: RURAL ELECTRIFICATION FOR THE DEVELOPMENT OF REMOTE AREAS OF NEPAL.
AUTHOR: ZOLLINGER H
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 7 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/47
SUBJECT: HYDROELECTRIC POWER POTENTIAL IN RURAL AREAS OF NEPAL - (1) STUDY PROGRAMME TO SPEED UP ELECTRIFICATION; CONSTRUCTION OF A SMALL HYDEL PLANT (2) REMOTE SITES FOR POWER STATIONS; TOPOGRAPHIC AND ECONOMIC ASPECTS; /HYDROLOGY/, (3) /ELECTRIC POWER MARKET/; RURAL DEVELOPMENT (4) VARIOUS ELECTRICAL ENERGY SOURCES (5) APPROPRIATE TECHNOLOGY; COSTS (6) DEVELOPMENT AID IMPACT; DECENTRALIZATION. 0311

TITLE: Rural electrification in Nepal: the development of low-cost micro hydroelectric systems
CORPORATE NAME: INTERMEDIATE TECHNOLOGY INDUSTRIAL SERVICES.
SOURCE: Rugby, UK, ITIS, 1980.
SERIES: Project bulletin (Ref. 75/2/80)
SUBJECT: Mini-Hydroelectric power 0312

TITLE: Rural energy needs and alternative sources
AUTHOR: Muchiri, G.
CONFERENCE: UNEP (et al) Energy and Environment in East Africa Conference, Nairobi, Kenya, 7-10 May 1979
SOURCE:
SERIES: Proceedings, pp. 232-50
SUBJECT: Mini-Hydroelectric power
/Energy demand/ of rural areas in developing nations. Small-scale hydroelectric power, among others, as alternative to firewood and animal and human energy resources 0313

TITLE: Rural hydroelectric stations
CORPORATE NAME: BUREAU OF WATER CONSERVANCY AND ELECTRIC POWER, REVOLUTIONARY COMMITTEE OF HUNAN PROVINCE.
SOURCE: Hunan People's Press, 1974. 2 v.
SUBJECT: Mini-Hydroelectric power
Installations of less than 400 kW capacity, using water heads under 30 meters. Volume I. Part 2 - construction of stone and /earth dam/s, /sluices/, and /penstock/s (reinforced concrete, wood, ferro cement) 0314

TITLE: Rural small-scale hydro-electric stations
CORPORATE NAME: EAST CHINA COLLEGE OF WATER CONSERVANCY.
SOURCE: Shanghai, China, Shanghai People's Press, 1973.
SUBJECT: Mini-Hydroelectric power
Village construction of /wood turbines/, /ferrocement turbines/, and welded turbines; also /axial flow turbines/ (full-admission and partial admission). /Dam/ construction 0315

TITLE: Rural small-scale hydroelectric stations
CORPORATE NAME: CANTON BUREAU OF WATER CONSERVANCY AND ELECTRIC POWER.
SOURCE: Canton, China, Canton People's Press, 1973.
SUBJECT: Mini-Hydroelectric power 0316

TITLE: Schadenausweitungen infolge mangelhafter Ueberwachungseinrichtungen an kleinen Wasserkraftgeneratoren
AUTHOR: Kugler, Hans
SOURCE:
SERIES: Maschinenschaden v. 48, no.3, pp. 77-80
SUBJECT: Mini-Hydroelectric power
Several instances of damage to small hydroelectric /generators/, illustrate need for basic protective measures. Other /damage prevention/ possibilities 0317

TITLE: Second look at small hydro sites
AUTHOR: Van Vranken, W.P.
Wachter, G.F.
SOURCE:
SERIES: Allis-Chalmers engineering review, 1965, v. 30, no. 3
SUBJECT: Mini-Hydroelectric power 0318

TITLE: SEMINAR REPORT ON DEVELOPMENT OF SMALL-SCALE HYDROELECTRIC POWER AND FERTILIZER PRODUCTION IN NEPAL.
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO
ASIA SOCIETY (SEADAG), NEW YORK.
SOURCE: VIENNA, 1980. 19 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/27
SUBJECT: REPORT OF A MEETING (POKHARA, 1977) DEALING WITH DEVELOPMENT OF SMALL HYDROELECTRIC POWER AND FERTILIZER INDUSTRY IN NEPAL - (1) CURRENT /ENERGY DEMAND/, PROBLEMS OF DEFORESTATION; (2) /HYDROLOGY/CAL DATA FOR SMALL RIVERS: SMALL HYDRO-PROJECTS; SOCIAL ASPECTS AND ECONOMIC ASPECTS; RURAL DEVELOPMENT (3) APPROPRIATE TECHNOLOGY FOR TURBINES, /GENERATORS/, ETC; COSTS 0319

TITLE: Service/Maintenace Seminar, Hydro-Turbine Division
CONFERENCE: 1982 Service/Maintenance Seminar, York, PA, USA, 12-14 October 1982
CORPORATE NAME: Allis-Chalmers Corporation.
SOURCE: York, PA, USA, 1982.
SUBJECT: Mini-Hydroelectric power
8 bulletins and 12 technical papers dealing with pumps and turbines; includes installation lists; testing, rehabilitation and modernization of hydroelectric units 0320

TITLE: Shadow price evaluation of small hydroelectric projects in Peru
AUTHOR: Bustamente, H.
SOURCE: Bradford, UK, Project Planning Centre for Developing Countries, 1980. 39 p.
SUBJECT: Mini-Hydroelectric power
Cost benefit analysis of mini-hydro generation in context of rural electrification in Peru. Methodology for project appraisal 0321

TITLE: SHYFEA - a small hydroelectric financial/economic analysis package
AUTHOR: Klotz, Louis H.
Comer, Michael E.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June 1981. Proceedings, v. 2, pp. 934 (13)
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, v. 2, pp. 934-47
SUBJECT: Mini-Hydroelectric power cost benefit analysis
Method of determining if a small-scale hydro project will be economically feasible. SHYFEA /computer economic model/ is designed in accordance with four sequential modules which depend on the output of the previous module 0322

TITLE: Simplified methodology for economic screening of potential low-head small-capacity hydroelectric sites: final report, May 1979-August 1980
AUTHOR: Brown, H.M.
SOURCE: San Francisco, CA, USA, Tudor Engineering Company, 1981. 229 p.
DOCUMENT NO.: EPRI-EM-1679
SUBJECT: Mini-Hydroelectric power
/Project manual/ allowing personnel with limited technical background to make first level analyses of potential hydroelectric power sites. Step by step procedures to estimate power and energy output, project costs, and economic feasibility of plants ranging from 200 to 15,000 kW, with head range of 6 to 200 feet 0323

TITLE: Situation and perspectives of technology and equipment for small hydro power stations in Latin America
AUTHOR: Indacochea, E., et al
CONFERENCE: Latin American Seminar on Small Hydro Power Stations, 1st, Girardot, Colombia, November 1980
SOURCE: Quito, Ecuador, OLADE, 1980. 120 p.
SUBJECT: Mini-Hydroelectric power
Various aspects treated in context of present situation: state of research and technology; technology transfer; equipment supply; human resources for technology development and production. Proposed strategies for national and regional levels: Latin America 0324

TITLE: Six Midwestern hydroelectric projects from original construction to the 1980's
AUTHOR: Fisher, John E.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June 1981
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, pp. 626-34
SUBJECT: Mini-Hydroelectric power
Ongoing environmental problems, economic aspects. Hydroelectric power favored both economically and environmentally over other alternative energy forms. Plant /design/, construction and operation 0325

TITLE: Small and micro hydroelectric power plants - technology and feasibility
AUTHOR: Noyes, Robert (ed.)
SOURCE: Park Ridge, NJ, USA, Noyes Data Corporation, 1980. 457 p.
SERIES: Energy technology review, no. 60
SUBJECT: Mini-Hydroelectric power
General survey for small-scale (less than 15 Mw) and micro (less than 100 kW) hydroelectric plants. Preinvestment studys - economic and financial analysis, /hydrology/ studies, facility integrity, electromechanical systems, civil engineering features. Available equipment. Information package from the initial idea to the production of power 0326

TITLE: Small hydro - a viable alternative now
AUTHOR: Gladwell, John S.
Warnick, Calvin C.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, pp. 796-802
SUBJECT: Mini-Hydroelectric power
Reasons for underutilization of small-scale hydroelectric power throughout the world. Outlines a program of education to encourage its development: short courses for hydropower professionals; conferences to acquaint decision-makers with potential of hydropower; post graduate programs for profession 0327

TITLE: Small hydro control and operation
AUTHOR: Mayo, Howard A.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, pp. 89-99
SUBJECT: Mini-Hydroelectric power
Simplified, automatic /control mechanisms/. Primary /load control/ by /runners/ blades with /intakes/ /gates/ or valves for tight water shutoff. Generator controls and /damage prevention/ devices 0328

TITLE: "Small hydro" generates new interest
AUTHOR: Friedlander, Gordon D.
SOURCE:
SERIES: Electrical world, 1 October 1978, v. 190, no. 7, p. 46(4)
SUBJECT: Mini-Hydroelectric power
Plan for 11 Mw power plant on the Bear River in California. Construction, equipment, site conditions, and costs. Case study 0329

TITLE: SMALL HYDRO IN SWEDEN.
AUTHOR: PERSSON T
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND. HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 37 P. TABLES, GRAPHS, DIAGRAM.,
DOCUMENT NO.: UNIDO-ID/WG.329/3
SUBJECT: SMALL HYDROELECTRIC POWER GENERATION IN SWEDEN - (1) BACKGROUND, POTENTIAL FOR SMALL HYDRO; LEGAL ASPECTS: DEVELOPMENT PROGRAMME; PILOT PLANT INSTALLATIONS; STANDARDIZATION OF TURBINES UNITS; CAPACITY OF POWER STATIONS; INVITATION TO TENDER; REQUIRED WATER COURT DECISIONS, ECONOMIC ASPECTS, GOVERNMENT CONTRIBUTIONS TOWARD /RENOVATION/ OF CLOSED DOWN SMALL HYDRO-PLANTS 0330

TITLE: Small hydro machinery
AUTHOR: Anderson, E.
Benham, M.G.
SOURCE:
SERIES: Turbomachinery international (Norwalk, CT, USA), May-June 1981, v. 22, no. 5, pp. 45-48
SUBJECT: Mini-Hydroelectric power
Design criteria for small hydroelectric projects - less than 15 Mw. Improved efficiency of turbines and /generators/ 0331

TITLE: Small hydro plant development program
CORPORATE NAME: EG AND G IDAHO.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1980. 322 p.
DOCUMENT NO.: DOE/ID/01570-T2(v.2)App.A-K
SUBJECT: Mini-Hydroelectric power
Technical and economic feasibility of /pump turbines/ - /induction motor generators/ packages in lieu of standardized turbogenerator units. Manufacturers data on standardized hydroturbines, pumping equipment, generators, and equipment packages 0332

TITLE: Small hydro potential in New Zealand
AUTHOR: McLeay, R.M.
Leyland, B.W.
Royds, Sutherland
SOURCE:
SERIES: New Zealand Energy Journal, 25 January 1976, v. 49, no. 1, pp. 4 (2)
SUBJECT: Mini-Hydroelectric power
Assessing costs and economic aspects of small (30 Mw capacity) hydro stations. Importance of reducing costs to compete with large established plants 0333

TITLE: SMALL HYDRO POWER DEVELOPMENT IN BURMA.
AUTHOR: Myint Aung, U.
Zaw Win, U.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 5 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/2
SUBJECT: Small hydroelectric power development in Burma - (1) topography, rivers, development potential (2) basic principles for development of mini electric power stations; financing; equipment, turbines (3) arrangements for costs reduction (4) management of small hydropower developments; planning and project implementation 0334

TITLE: SMALL HYDRO POWER DEVELOPMENT IN FIJI.
AUTHOR: Pickering, D.S.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 9 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/3
SUBJECT: Small hydroelectric power development in Fiji - (1) topography and climate (2) electric power supply system and potential hydro-power drawing on rivers on various islands (3) demand; economic aspects; equipment; site assessments; engineering 0335

TITLE: Small hydro sets can yield competitive energy
AUTHOR: Gordon, J.L.
SOURCE:
SERIES: Energy international, August 1978, v. 15, no. 8, pp. 26(4)
SUBJECT: Mini-Hydroelectric power
Determining approximate cost of developing a site by multiplying equipment costs by a factor that will take into account the difficulties of the prospective site.
Determining power output from regional unitized /hydrology/ charts. (Economic aspects) 0336

TITLE: Small hydro stations: a sense of urgency
AUTHOR: Sasaki, N.
Yasuda, T.
SOURCE: Tokyo, Japan, Agency of Natural Resources and Energy, 1979.
SERIES: International water power dam construction, January 1979, v. 31, no. 1, pp. 31-33
SUBJECT: Mini-Hydroelectric power
/Design/ and standardization of the hydromechancial plant to reduce capital costs of small schemes. Critical economic equivalent condition between the small-scale plant and the oil-fired /thermal power station/ is approximated by a /computer economic model/. (Economic aspects) 0337

TITLE: Small hydro: where do we go from here?
AUTHOR: Lawrence, J.D.
SOURCE:
SERIES: Public power, July-August 1977, v. 35, no. 4, pp. 23 (3)
SUBJECT: Mini-Hydroelectric power
Potential for hydroelectric plants at undeveloped sites on smaller rivers.
Environmental and costs assessments.
Possibilities for cost savings 0338

TITLE: Small hydroelectric power development in China
AUTHOR: Skidmore, F.R.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1980. 18 p.
DOCUMENT NO.: NTIS:UCID-18772
SUBJECT: Mini-Hydroelectric power
Chinese have developed technology for a variety of operating conditions. Their small turbines and accompanying /control mechanisms/ appear to be competitive in the American market 0339

TITLE: Small hydroelectric power plants
CORPORATE NAME: UTREDNING FRAEN STATENS INDUSTRIVERK.
SOURCE: Stockholm, Sweden, 1977. 187 p.
DOCUMENT NO.: NTIS:SIND-PM-1977-13
SUBJECT: Mini-Hydroelectric power
Small hydroelectric power plants in Sweden. Historical background, review of obstacles, and proposals for encouraging development.
0340

TITLE: Small hydroelectric project manual for Appalachian New York
CORPORATE NAME: NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY.
SOURCE: Washington, D.C., USA, Appalachian Regional Commission, 1980. 259 p.
DOCUMENT NO.: NTIS:PB80-207772
SUBJECT: Mini-Hydroelectric power
To identify existing /dam/ (/existing facilities/) sites that have potential for small /low head/ generating plants, and assist untrained planners in making preinvestment studys. Legal, regulatory, and institutional issues are also identified and discussed
0341

TITLE: Small hydroelectric projects for rural development - planning and management
AUTHOR: Goodman, Louis J.
Hawkins, John N.
Love, Ralph N.
SOURCE: New York, NY, USA, Pergamon, 1981. 200 p.
SUBJECT: Mini-Hydroelectric power
Three small hydropower projects analyzed according to guidelines of the integrated project planning and management cycle (IPPMC). Major phases and tasks of a given project: planning, appraisal and design; selection, approval, application; operation, control, handover; evaluation and refinement
0342

TITLE: Small hydro-electric schemes and rural development
AUTHOR: El-Hinnawi, Essam
CONFERENCE: UNEP (et al) Energy and Environment in East Africa Conference, Nairobi, Kenya, 7-10 May 1979
SOURCE:
SERIES: Proceedings. pp. 54-67
SUBJECT: Mini-Hydroelectric power
Possibilities for accelerated development through small hydroelectric power schemes: modernizing agriculture; developing agro- and cottage industries; improving quality of life. Environmental, economic aspects and social aspects of such development 0343

TITLE: Small hydropower development
CORPORATE NAME: UNITED NATIONS ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC.
SOURCE: Bangkok, Thailand, ESCAP, 1982. 309 p.
DOCUMENT NO.: ST/ESCAP/208
SERIES: Renewable sources of energy, v. 4
SUBJECT: Mini-Hydroelectric power
Role and potential of small-scale hydropower in overall energy development. Review of present technology - applications; local manufacturing potential; standardization. Economic aspects. Policy and institutional aspects. Status of development in ESCAP region (by country) 0344

TITLE: SMALL HYDRO-POWER DEVELOPMENT.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO
ESCAP.
SOURCE: Vienna, 1983. 15 p. table, graph, diagrams..
DOCUMENT NO.: UNIDO-ID/WG.403/30
SUBJECT: Development of small hydroelectric power (SHP) generation - (1) methodology for feasibility studies and other studies appropriate for SHP (2) domestic production of SHP turbines (3) ways and means of costs reduction compatible with viability and utility requirements (4) electric power station, production capacity, financing 0345

TITLE: SMALL HYDRO-POWER DEVELOPMENT IN CHINA.
AUTHOR: Deng Bingli
Huang Zhongli
Sing Shengyi
Yang Yupeng
Zhang Beichen
Zhu Xiaozhang
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 70 p. tables, graphs, diagrams.,
DOCUMENT NO.: UNIDO-ID/WG.403/13
SUBJECT: Development of small hydroelectric power generation (SHP) in China - (1) general situation and fundamental experience; benefits of SHP; rivers, water resources; classification of capacity; construction experience (2) independent operation of SHP grid at the county level (Jinyun County) electric power distribution (3) establishing indigenous manufacture of SHP turbines and auxiliary equipment 0346

TITLE: SMALL HYDRO-POWER DEVELOPMENT IN NEPAL.
AUTHOR: Shrestha, Atma Krishna
Shrestha, Hari Man
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 7 p. table.,
DOCUMENT NO.: UNIDO-ID/WG.403/9
SUBJECT: Small hydroelectric power development in Nepal - (1) topography, development potential (2) background of small/micro electric power development (3) decentralization versus centralization (4) costs, equipment, inaccessability of sites (5) project features; costs of completed projects 0347

TITLE: SMALL HYDRO-POWER DEVELOPMENT IN SRI LANKA.
AUTHOR: Fernando, E. Carlo
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 6 p. diagram.,
DOCUMENT NO.: UNIDO-ID/WG.403/14
SUBJECT: Small hydroelectric power development in Sri Lanka - (1) topography, climate, river flows (2) existing electric power stations (3) restoration of former mini electric power stations; costs, financing (4) planning of SHP by the Ceylon Electricity Board (5) economic aspects (6) equipment, turbines; importance of sturdy, trouble-free machinery

0348

TITLE: Small hydro-power fluid machinery
AUTHOR: Webb, D.R. (ed.)
Papadakis, D.N. (ed.)
CONFERENCE: American Society of Mechanical Engineers (ASME) Winter Annual Meeting, Chicago IL, USA, 16-21 November 1980
SOURCE: New York, NY, USA, ASME, 1980. 110 p.
SERIES: Proceedings
SUBJECT: Mini-Hydroelectric power
Fifteen papers concerned with hydroelectric installations which can offer /low head/s and unit inputs. Current research in this area seeking an economic source of energy with minimum environmental impact

0349

TITLE: SMALL HYDROPOWER IN CHINA.
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO
MINISTRY OF WATER CONSERVANCY, CHINA.
SOURCE: Vienna, 1981. 11 p. tables.,
DOCUMENT NO.: UNIDO-ID/WG.329/23
SUBJECT: Small-scale hydroelectric power generation in China - (1) background of MHG development; installed capacity, number of stations (2) decentralized energy potential for rural needs (3) construction of power stations relying on local administration (4) government policy (5) manufacture of turbines, /generators/ and other equipment

0350

TITLE: SMALL HYDRO-POWER (SHP) IN TURKEY.
AUTHOR: Pasin, Suan
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 9 p. tables.,
DOCUMENT NO.: UNIDO-ID/WG.403/17
SUBJECT: Small hydroelectric power development in Turkey - (1) development potential (2) planning the construction of small electric power stations in the near future (3) costs, financial aspects, economic aspects (4) equipment; workshops for domestic production of turbines and generators 0351

TITLE: Small low-head hydroelectric power
AUTHOR: Krauss, O.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1978. 495 p.
DOCUMENT NO.: NTIS:IDO-10076
SERIES: Proceedings of a conference with 33 participants
SUBJECT: Mini-Hydroelectric power: /renovation/ of /existing facilities/
Rehabilitation of abandoned hydro sites and generation of power at non-power /dam/s to increase electric energy supply.
Multipurpose use considered. Major potential problems are economic, institutional 0352

TITLE: Small Low-head Hydropower PRDA-1706 Contractor's Semposium
CONFERENCE: Small Low-Head Hydropower PRDA-1706 Contractor's Symposium, Albany, NY, USA, 8 May 1979
CORPORATE NAME: EG AND G IDAHO.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 385 p.
DOCUMENT NO.: NTIS:CONF-7905154
SUBJECT: Mini-Hydroelectric power
Summaries of /low head/ power plant preinvestment studys 0353

TITLE: Small power plants for hydroelectric generation in rural areas
AUTHOR: Tudela, Carlos
CONFERENCE: Small Hydroelectric Powerplants - an Information Exchange on Problems, Methodologies, and Development, Ecuador, 19-21 August 1980
SOURCE: Ecuador, National Rural Electric Cooperative Association, 1980. pp 286-289
SUBJECT: Mini-Hydroelectric power 0354

TITLE: Small Scale Hydro Resource Management
AUTHOR: Barandy, Mark S.
Hickey, Guy M.
Mayo, Howard A.
Miller, Douglas L.
CONFERENCE: Small Scale Hydro Resource Management. Denver Research Institute, University of Denver, USA, 28 October 1982
SOURCE: York, PA, USA, Allis-Chalmers Corporation, 1982.
SUBJECT: Mini-Hydroelectric power
Papers dealing with low head hydroelectric fundamentals, standardized generating units; and case studys on new small turbines installations 0355

TITLE: Small scale hydroelectric manual
CORPORATE NAME: CROWN AGENTS DEVELOPMENT DIVISION.
SOURCE: London, UK, Crown Agents for Oversea Governments and Administrations, 1979.
SUBJECT: Mini-Hydroelectric power
Planning and procedures for small-scale hydroelectric power generation as integral part of a rural development scheme. Economic aspects and social aspects investigation and analysis; technical and costs analysis; plant /design/; electrical equipment; civil engineering works; management; maintenance and repair 0356

TITLE: Small scale hydroelectric power in the Pacific Northwest: new impetus for an old energy source
CONFERENCE: National Conference of State Legislatures, Denver, CO, USA, July 1980
SOURCE: Washington, DC, USA, US Dept. of Energy, 1980. 134 p.
DOCUMENT NO.: DOE/RA/23220-04
SUBJECT: Mini-Hydroelectric power, USA
To inform state legislators of benefits of small-scale hydro. Identifies state obstacles to development, and explores options for change available to policy makers 0357

TITLE: Small scale hydroelectric power in the Southeast: new impetus for an old energy source
CONFERENCE: National Conference of State Legislatures, Denver, CO, USA, June 1980
SOURCE: Washington, DC, USA, US Dept. of Energy, 1980. 152 p.
DOCUMENT NO.: DOE/RA/23220-05
SUBJECT: Mini-Hydroelectric power: USA
Overcoming legal, institutional, environmental and economic barriers to small-scale hydro development at the state level.
Proposed legislation to expedite federal licensing of small-scale hydro projects 0358

TITLE: SMALL SCALE HYDROELECTRIC POWER TECHNOLOGY.
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO
NORWEGIAN WATER RESOURCES AND ELECTRICITY BOARD.
SOURCE: Vienna, 1981. 28 p. graphs, diagrams..
DOCUMENT NO.: UNIDO-ID/WG.329/36
SUBJECT: Small scale hydroelectric power technology in Norway - (a) civil engineering and structures: /dam/s, power conduit, /power house/, /hydrology/, operation method (b) turbines: technical evolution and standardization (c) equipment, automatic control (d) operating conditions, costs, functions, maintenance and repair (e) planning and financing of development.
Diagrams 0359

TITLE: Small scale hydroelectric, preliminary program plan
AUTHOR: Entingh, Daniel J.
Fowler, Mark A.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1978.
SUBJECT: Mini-Hydroelectric power 0360

TITLE: Small scale hydropower
AUTHOR: Hildebrand, S.G.
Grimes, G.B., Jr.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
DOCUMENT NO.: NTIS:CONF-791056-1
SUBJECT: Mini-Hydroelectric power
Identifying potential environmental constraints and benefits to be considered, along with engineering and economic concerns, for overall technology assessment.
Environmental issues summarized 0361

TITLE: Small scale hydropower: an appropriate technology for less-developed countries
AUTHOR: Kersten, Robert D.
CONFERENCE: Waterpower 79 Symposium, Washington, DC, USA, 1-3 October 1979
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979.
SERIES: Proceedings, p. 776-82
SUBJECT: Mini-Hydroelectric power
Economic aspects and social aspects of decentralized small hydro power as compared to other energy technologies 0362

TITLE: Small scale hydropower: examples of the latest low head hydroelectric projects under construction and in operation
AUTHOR: Sattler, H.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June 1981
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE: Diagrams and photos
SERIES: Proceedings, v.2, p. 1201-11
SUBJECT: Mini-Hydroelectric power
Increasing popularity of small-scale hydroelectric power due to standardization of generating units. Three typical /low head/ installation /design/s 0363

TITLE: Small scale power sources
AUTHOR: Doyle, R.
Fraenkel, P.
SOURCE: London, UK, Intermediate Technology Publications, n.d..
SUBJECT: Mini-Hydroelectric power 0364

TITLE: Small scale power supplies for rural communities in developing countries
CORPORATE NAME: GENERAL ELECTRIC COMPANY.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1963. 120 p.
SUBJECT: Mini-Hydroelectric power
Alternative small-scale technologies: small-scale hydroelectric plants among others 0365

TITLE: SMALL-HYDRO POWER GENERATION IN PERU.
AUTHOR: COZ AF
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 16 p. table, maps..
DOCUMENT NO.: UNIDO-ID/WG.329/17
SUBJECT: Mini-hydroelectric power generation in Peru - development potential; plans for providing small hydropower plants for rural development; water resources in the Peruvian Andes (2) planning, construction and operation of small plants (3) technical and economic aspects of recently built plants (4) capacity for local manufacture of small turbines, /generators/, etc. (5) Training programmes. Bibliography 0366

TITLE: Small-scale and low-head hydroelectric station equipment
AUTHOR: Thapar, O.D.
Davadutta, Das
CONFERENCE: International Symposium on Water Resources Systems, Roorkee, India, December 1980. Special Session on Small Scale, Low Head and Hybrid Micro Hydel Generation
CORPORATE NAME: Water Resources Development Training Centre.
SOURCE: Roorkee, India, 1980.
SUBJECT: Mini-Hydroelectric power equipment 0367

TITLE: Small-Scale Hydropower in Africa
AUTHOR: Zoellner, D. et al
CONFERENCE: Small-scale hydropower in Africa. Workshop proceedings, 1 - 15 March 1982, Abidjan, Ivory Coast
CORPORATE NAME: National Rural Electric Cooperative Association.
SOURCE: Washington, DC, USA, NRECA, 1983. 180 p.
SUBJECT: Mini-Hydroelectric power
African hydropower development, analysing related aspects - technical considerations: /site selection/; equipment design; rural electrification. Institutional and economic aspects; financing, tariffs, training and maintenance of plants. Case studys from Ecuador, Ivory Coast, Pakistan and Zaire 0368

TITLE: SMALL-SCALE HYDRO-POWER PLANTS IN YUGOSLAVIA.
AUTHOR: HUMO D
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 10 p. tables, maps.,
DOCUMENT NO.: UNIDO-ID/WG.329/34
SUBJECT: Small hydroelectric power plants in Yugoslavia - (1) the national electric power distribution network (2) planning; development potential 0369

TITLE: Socio-economic considerations for decentralized small scale hydroelectric projects in developing countries
AUTHOR: Auslam, David, C.
Wood, Thomas W.
CONFERENCE: Waterpower 81 International Hydropower Conference, Washington, DC, USA, 22-24 June 1981
CORPORATE NAME: US ARMY CORPS OF ENGINEERS.
SOURCE:
SERIES: Proceedings, pp. 1056-64
SUBJECT: Mini-Hydroelectric power
Planning and assessment techniques suited for larger communities must be adapted to suit projects in decentralized rural regions. Considerations important to determining social aspects and economic aspects of decentralized hydro projects, including project sizing, typical loads, screening 0370

TITLE: Soft-tech
AUTHOR: Baldwin, J. (ed.)
Brand, S. (ed.)
SOURCE: New York, NY, USA, Penguin Books, 1978. 175 p.
SUBJECT: Mini-Hydroelectric power
A source book with information on how to construct, and where to locate spare parts for assorted projects 0371

TITLE: SOME ASPECTS OF SMALL HYDRO-POWER PLANNING AND IMPLEMENTATION IN ETHIOPIA.
AUTHOR: Mariam, Hailu G.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 4 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/18
SUBJECT: Small hydroelectric power development in Ethiopia - (1) development potential; rivers (2) centralized electric power planning (3) ten year energy indicative plan; rural development schemes (4) alternative sources in the self-contained-system; centralization versus decentralization (5) constraints 0372

TITLE: SOME CONSIDERATIONS FOR INTRODUCING MICRO-HYDROELECTRIC POWER PLANTS IN SIERRA LEONE.
AUTHOR: KAMARA DLB
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 6 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/14
SUBJECT: POTENTIAL FOR SMALL HYDROELECTRIC POWER PLANTS IN SIERRA LEONE - NEED FOR DEVELOPMENT OF RIVER RESOURCES TO PROVIDE DECENTRALIZEDELECTRIC POWER FOR RURAL AREAS; ECONOMIC ASPECTS OF RURAL ELECTRIFICATION; PRESENT STATUS OF MHP; COOPERATION WITH THE "INTERMEDIATE TECHNOLOGY DEVELOPMENT GROUP" (LONDON); TECHNICAL ASSISTANCE 0373

TITLE: SOME CONSIDERATIONS ON MINI-HYDRO-GENERATION UNITS. DEVELOPMENT AND APPLICATION.
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER OF MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO
JYOTI LTD., BARODA, INDIA.
SOURCE: VIENNA, 1979. 6 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/10
SUBJECT: SMALL HYDROELECTRIC POWER UNITS, WITH SPECIAL REFERENCE TO EXPERIENCE IN INDIA - INCREASING ROLE OF SUCH POWER SUPPLY; ADVANTAGE OF SMALL UNITS; DECISION MAKING IN THE ENERGY FIELD; IRRIGATION PLUS POWER GENERATION; RURAL DEVELOPMENT ASPECTS; RESEARCH AND DEVELOPMENT; SOCIAL ASPECTS, ECONOMIC ASPECTS; PROBLEMS OF TECHNOLOGY TRANSFER AND ORGANIZATIONAL INFRASTRUCTURE; PLANNING FOR MINI-GRID SYSTEM FOR RURAL AREA ELECTRIC POWER DISTRIBUTION 0374

TITLE: State space modeling of a series-compensated long distance transmission structure through graph theoretic approach
AUTHOR: Paliwal, L.N.
Nanda, J.
Satsangi, P.S.
SOURCE: New York, NY, USA, IEEE, 1977.
DOCUMENT NO.: IEEE Paper F 78 017-6, 9 p.
SUBJECT: Mini-Hydroelectric power
The small-perturbation /computer simulation model/ developed here permits inclusion of detailed dynamics of /generators/ stator, shaft, long transmission system and /controllers/ necessary for accurate and precise dynamic stability studies; with particular reference to subsynchronous resonance aspects 0375

TITLE: STATUS OF SMALL HYDRO-POWER IN DOMINICA.
AUTHOR: Bruney, Rawlins
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 4 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/10
SUBJECT: Small hydroelectric power (SHP) development in Dominica - (1) topography, rivers, water resources (2) present production of electric power (3) electric power stations (4) hydroelectric development potential; pipeline and turbines capacities; self financing 0376

TITLE: STATUS PAPER FOR THE WORKSHOP ON TECHNOLOGY TRANSFER PROBLEMS IN THE ESTABLISHMENT OF MINI/MICRO HYDRO-UNITS IN THE KINGDOM OF TONGA.
AUTHOR: BERNABE JC
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 4 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/9
SUBJECT: POSSIBILITY OF ESTABLISHING SMALL HYDROELECTRIC POWER UNITS IN TONGA - PRESENT ELECTRIC POWER STATIONS (BASED ON DIESEL OIL); NEED FOR ALTERNATIVE ENERGY SOURCES; PLANS FOR RIVER UTILIZATION ON THE ISLAND OF 'EUA'; RESEARCH AND DEVELOPMENT WORK REQUIRED; PLANNING METHOD; TECHNOLOGY TRANSFER
0377

TITLE: STATUS REPORT ON MHG IN BANGLADESH AND NEED FOR INTERNATIONAL CO-OPERATION.
AUTHOR: Mahmood, S.T.S.
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 9 p. tables.,
DOCUMENT NO.: UNIDO-ID/WG.376/9
SUBJECT: Development of small hydroelectric power generation in Bangladesh - (1) estimates of /energy demand/ (2) status of MHG programme; development priorities; research needs; training (3) proposed regional centre at Hangzhou, China
0378

TITLE: Suggested performance specifications of standard modular controls for the automation of small hydro electric facilities
AUTHOR: Beckwith, R.W.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1980. 149 p.
DOCUMENT NO.: NTIS:DOE/ID/01570-2
SUBJECT: Mini-Hydroelectric power
Hardware and software for automatic control of hydro plants from 50 kW to 15 Mw. Interchangeability of hardware and software from various suppliers. Written in modules to ease editing. Appendix explains choices specified
0379

TITLE: SUMMARY MINI-HYDRO PROJECT THAILAND.
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO
THAILAND. OFFICE OF RURAL ELECTRIFICATION.
SOURCE: Vienna, 1981. 3 p.,
DOCUMENT NO.: UNIDO-ID/WG.329/15
SUBJECT: Mini-hydroelectric power development in Thailand - describes a minihydro project

0380

TITLE: Summary of the Mid-Atlantic Conference on Small-Scale Hydropower in the Mid-Atlantic States: resolution of the barriers impeding its development
CONFERENCE: Conference on Small-Scale Hydropower in the Mid-Atlantic States, Washington, DC, USA, 4 May 1979
CORPORATE NAME: FRANKLIN PIERCE LAW CENTER.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 100 p.
DOCUMENT NO.: NTIS:DOE/RA/04934-04
SUBJECT: Mini-Hydroelectric power
Problems and policy responses raised by state and Federal regulation. Economic aspects of small-scale hydro develoment, and the operation and usefulness of the systems dynamics model (/computer economic model/) under development by the Thayer School of Engineering at Dartmouth. Federal and state programs to stimulate small-scale hydro development

0381

TITLE: Summary of the Midwest Conference on Small-Scale Hydropower in the Midwest: an old technology whose time has come
CONFERENCE: Conference on Small-Scale Hydropower in the Midwest, Detroit, MI, USA, November 1979
CORPORATE NAME: FRANKLIN PIERCE LAW CENTER.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1979. 147 p.
DOCUMENT NO.: NTIS:DOE/RA/04934-05
SUBJECT: Mini-Hydroelectric power
Problems and policy responses raised by state and Federal regulation. Economic aspects, and the operation and usefulness of the systems dynamics model (/computer economic model/) developed by the Thayer School of Engineering at Dartmouth College

0382

TITLE: Supply authorities' involvement in the development of small hydro generation schemes
AUTHOR: Howes, R.C.W.
SOURCE:
SERIES: New Zealand energy journal, August 1976, v. 49, no. 8, pp. 123-129
SUBJECT: Mini-Hydroelectric power 0383

TITLE: Supply authority engineer and small hydro-electric stations
AUTHOR: Western, R.C.
SOURCE:
SERIES: New Zealand energy journal 25 July 1978, v. 51, no. 7, pp. 10[illegible] (3)
SUBJECT: Mini-Hydroelectric power
Appointment of consulting engineers; design and implementation of feasibility and environmental impact studies; governmental approval and financing; construction, distribution, commissioning, and management 0384

TITLE: SWEDISH DEVELOPMENT OF MINI-HYDROELECTRIC GENERATION UNITS
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO
SWEDISH CAPABILITIES FOR ASSISTANCE.
SOURCE: VIENNA, 1979. 8 P.,
DOCUMENT NO.: UNIDO-ID/WG.305/17
SUBJECT: DEVELOPMENT OF SMALL HYDROELECTRIC POWER UNITS IN SWEDEN - HISTORICAL BACKGROUND, EARLY DEVICES FOR ENERGY TRANSMISSION; STUDIES ON 100-1500 KW HYDRO-ELECTRIC POWER STATIONS, WITH IMPLICATIONS FOR DEVELOPING COUNTRIES; PROTOTYPE PLANTS; PROPOSED TYPES OF TURBINES. BIBLIOGRAPHY 0385

TITLE: TECHNOLOGICAL NETWORK FOR SMALL HYDRO POWER GENERATION.
AUTHOR: Deverajan, B.R.
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 4 p.,
DOCUMENT NO.: UNIDO-ID/WG.376/5
SUBJECT: Network for small hydroelectric power generation in Asia and the Pacific - (1) the network concept; role of participating institutions and sponsoring organizations (2) programme components dealing with: /hydrology/, water flow, geology; equipment; electric power distribution and costs; social aspects and economic aspects, etc. (3) relationship of the network to the Regional Centre in Hangzhou, China (4) financing the network 0386

TITLE: THAILAND PROPOSAL FOR THE MANAGEMENT OF THE REGIONAL CENTRE IN SMALL/MINI HYDRO POWER GENERATION.
AUTHOR: Premmani, Prapath
CONFERENCE: JOINT UNDP/UNIDO/ESCAP/CHINA SENIOR EXPERT GROUP MEETING ON THE CREATION OF A REGIONAL NETWORK SYSTEM AND THE ASSESSMENT OF PRIORITY NEEDS ON RESEARCH, DEVELOPMENT AND TRAINING IN THE FIELD OF SMALL/MINI HYDRO POWER GENERATION, HANGZHOU, CHINA, 1982
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1982. 7 p.,
DOCUMENT NO.: UNIDO-ID/WG.376/2
SUBJECT: Proposal (based on experience in Thailand) on management of a regional centre for small hydroelectric power generation in the ESCAP area - (1) reasons for implementing MHG (2) problems in MHG development (3) need for regional network system (4) concept, scope, areas of activities 0387

TITLE: Thyristor excitation and voltage control system WGSY for small and medium power generation
AUTHOR: Kosiek, J.
Kulik, R.
Orlowski, J.
Raczunas, W.
SOURCE:
SERIES: Energetyka (Poland), 1978, v. 32, no. 2, pp. 55-58
SUBJECT: Mini-Hydroelectric power
Results of operation tests carried out at the hydro power station Smardzewice 0388

TITLE: Tube turbines to modernize hydro plants
AUTHOR: Van Vranken, W.P.
SOURCE: West Allis, WI, USA,
SERIES: Allis-Chalmers engineering review, 2 p.
SUBJECT: Mini-Hydroelectric power
/Tube turbines/ for /renovation/ and modernization of outdated plants by fitting these units into existing waterways with a minimum of new construction. Features, examples, and diagrams 0389

TITLE: Turbine design and flow relationship
AUTHOR: Mayo, Howard A.
CONFERENCE: Hydropower and Transmission 8th Environmental Conference, Lake Champlain, NY, USA, 9-10 June 1981
CORPORATE NAME: LAKE CHAMPLAIN AD HOC COMMITTEE.
SOURCE: Diagrams and drawings
SERIES: Proceedings, pp. 153-71
SUBJECT: Mini-Hydroelectric power
/Runners/, /flow control/ device, upstream water passageway, draft tube, and tailrace configurations - all components to be /design/ed in accordance with head and flow relationships. Need to consider relative velocities and net power factors 0390

TITLE: Turbine design and performance for the Mersey-Forth hydro power development
AUTHOR: Causon G.J.
SOURCE:
SERIES: Institute of Engineers of Australia. Mechanical Chemical Engineering Transactions, May 1972, v. MC8, no. 1, pp. 31-36
SUBJECT: Mini-Hydroelectric power
Models as basis for performance guarantees. Elimination of conventional governor on a turbine with long tunnel and /penstock/ system. Use and advantages of a small spiral design for /Kaplan turbines/. Use of air to avoid adverse effects from water column separation on a turbine with a long pressure tailrace 0391

TITLE: Turbine water wheels
CORPORATE NAME: JAMES LEFFEL COMPANY.
SOURCE: Springfield, OH, USA, J. Leffel, n.d..
SERIES: Bulletin 36
SUBJECT: Mini-Hydroelectric power
/Water wheels/ 0392

TITLE: Two economic papers: I. Monopoly power and the supply of power from small generating stations: II. A preliminary economic analysis of the value of contributions by small dams to system generation reliability
CORPORATE NAME: FRANKLIN PIERCE LAW CENTER.
SOURCE: Washington, DC, USA, US Dept. of Energy, 1980. 33 p.
DOCUMENT NO.: NTIS:DOE/RA/04934-42
SUBJECT: Mini-Hydroelectric power
How control of the /electric power market/ by large utilities affects the small station generator market, the retail market, and the development of small power production. Concludes that small /dam/s, even with highly varying outputs, contribute to system reliablility, and that their suppliers should be reimbursed 0393

TITLE: UNESCO source book for science and technology
CORPORATE NAME: UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION. UNESCO
SOURCE: New York, NY, USA, UNIPUB, 1973. 254 p.
SUBJECT: Mini-Hydroelectric power
How to construct model /hydraulic rams/ and /water wheels/ 0394

TITLE: UNIDO ISSUE PAPER.
CONFERENCE: SEMINAR-WORKSHOP ON THE EXCHANGE OF EXPERIENCES AND TECHNOLOGY TRANSFER ON MINI-HYDROELECTRIC GENERATION UNITS, KATHMANDU, NEPAL, 1979
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1979. 24 P. TABLE, DIAGRAMS.,
DOCUMENT NO.: UNIDO-ID/WG.305/13
SUBJECT: ISSUES PAPER ON SMALL HYDROELECTRIC POWER GENERATION UNITS FOR DEVELOPING COUNTRIES - (1) TECHNICAL ASSISTANCE (2) MHG TECHNOLOGY, TECHNOLOGY TRANSFER, /DAM/ CONSTRUCTION, SAFETY ASPECTS, EQUIPMENT STANDARDIZATION (3) ECONOMIC ASPECTS, COSTS (4) TURBINES; EQUIPMENT OUTPUT RATIO; /ENERGY DEMAND/ (5) RURAL DEVELOPMENT PLANNING 0395

TITLE: UNIDO ISSUE PAPER. (HYDROELECTRIC POWER).
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980
CORPORATE NAME: UNIDO.
SOURCE: VIENNA, 1980. 18 P. TABLE.,
DOCUMENT NO.: UNIDO-ID/WG.329/1
SUBJECT: ISSUES RELATING TO TECHNOLOGY FOR SMALL HYDROELECTRIC POWER GENERATION (MHG) - (1) SYSTEMS APPROACH TO ESTABLISHING MHG PROJECTS: SETTING OBJECTIVES AND PRIORITIES; IDENTIFICATION OF PRESENT CAPACITIES AND KNOWHOW; ACTION PLANNING (2) DOMESTIC PRODUCTION OF MHG EQUIPMENT AND CIVIL ENGINEERING: FLOW CHARTS, TECHNOLOGY ADAPTATION AND CO-ORDINATION (3) FINANCING MHG INSTALLATIONS: PROJECT EVALUATION, SOURCES OF CAPITAL; FINANCIAL MANAGEMENT 0396

TITLE: UNIDO ISSUE PAPER. (WORKSHOP ON SMALL HYDROELECTRIC POWER).
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/FEDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 6 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/31
SUBJECT: Outlining issues on small hydroelectric power (SHP) development - (1) simple methodology for SHP feasibility studies (2) ways and means of costs reduction (3) centralization versus decentralization regarding SHP development; conversion into practical projects; their implementation promoting local design and domestic production of SHP (4) turbines, machinery, etc. (5) regional cooperation and network systems 0397

TITLE: Using water resources
CONFERENCE: VOLUNTEERS IN TECHNICAL ASSISTANCE. VITA
SOURCE: Arlington, VA, USA, VITA, 1977. 143 p.
SUBJECT: Mini-Hydroelectric power
Water resource development, water lifting and transport, storage, power generation, and purification. 0398

TITLE: Village technology handbook
CORPORATE NAME: VOLUNTEERS IN TECHNICAL ASSISTANCE. VITA
SOURCE: Arlington, VA, USA, VITA, 1970. pp. 1-145
SUBJECT: Mini-Hydroelectric power
Chapter I deals with developing water resources, water lifting and transport, water storage, water power, and water purification 0399

TITLE: Village water supply: economics and policy in the developing world
AUTHOR: Saunders, R.J.
Warford, J.J.
SOURCE: Baltimore, MD, USA, Johns Hopkins University Press, 1976. 279 p.
SUBJECT: Mini-Hydroelectric power
Social aspects and economic aspects, administrative problems associated with rural area water supply and sanitation 0400

TITLE: Warrior Ridge redevelopment
AUTHOR: Gallus, R.T.
Richert, R.C.
SOURCE: 1979. pp. 1-7
SERIES: Proceedings ASCE, 1979. v. 105, No. 1, pp. 1-7
SUBJECT: Considers various options on future of small flood-damaged hydroelectric power project. Recommends /renovation/ by replacing damaged equipment and modifying existing facilities
Mini-Hydroelectric power 0401

TITLE: Water power
AUTHOR: Oates, T.
SOURCE:
SERIES: Mother Earth News (Hendersonville, NC, USA), 1973, pp. 62-64
SUBJECT: Mini-Hydroelectric power
Author describes installation of his own hydroelectric /generators/ with sluice and /water wheels/ system 0402

TITLE: Water power
SOURCE:
SERIES: Alternative sources of energy (A.S.E.) (Milace, MN, USA), 1974, no. 14, pp. 17-21
SUBJECT: Mini-Hydroelectric power
Construction of /water wheels/ 0403

TITLE: Water power development
AUTHOR: Mosonyi, E.
SOURCE: Budapest, Hungary, VDR Verlag, 1960. 2 v.
SUBJECT: Mini-Hydroelectric power
Includes a section on "midget power plants." 0404

TITLE: Water supply for rural areas and small communities
AUTHOR: Wagner, E.
Lanoix, J.
SOURCE: World Health Organization, 1971. 327 p.
SUBJECT: Mini-Hydroelectric power
Informs a small community how to plan and manage a water supply system: sanitation considered. 0405

TITLE: Waterpower: a short overview
AUTHOR: Kristoferson, L.
SOURCE:
SERIES: Ambio (Oxford, UK), 1977, v. 6, no. 1, pp. 44 (2)
SUBJECT: Mini-Hydroelectric power
Less than 10 % of water power resources in developing countries exploited. Small-scale units may ease social aspects of problems, and environmental disruptions caused by large artificial lakes 0406

TITLE: WAYS AND MEANS OF COST REDUCTION COMPATIBLE WITH VIABILITY AND UTILITY REQUIREMENTS.
AUTHOR: Zainal Abidin, Mohamed Z.B.
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. 8 p. diagram.,
DOCUMENT NO.: UNIDO-ID/WG.403/7
SUBJECT: Cost reduction for small hydroelectric power projects, based on experience in Malaysia - stages in project implementation; feasibility studies; topographical survey work; economic analysis and financial aspects; tendering procedures; civil engineering and construction; electronic equipment; transmission and electric power distribution. 0407

TITLE: Will Small Dams Create Big Problems?
AUTHOR: Johnson, Phillip
SOURCE: Washington, DC, USA, National Wildlife Federation, Oct/Nov 1983. pp.18-21
SUBJECT: Mini-Hydroelectric power 0408

TITLE: Will your small-hydro development be a liquid asset or only a libaility
AUTHOR: O'Keefe, William
SOURCE:
SERIES: Power, January 1981, v. 125, no. 1, p. 75 (3)
SUBJECT: Mini-Hydroelectric power
Development problems and solutions. Choosing a site. Range of semi-standardized small-turbines designs that will match any site need in terms of head, capacity and excavation restrictions. Several turbines described 0409

TITLE: Windmills and watermills
AUTHOR: Reynolds, J.
SOURCE: New York, NY, USA, Praeger, 1970. 191 p.
SUBJECT: Mini-Hydroelectric power
Examines overshot, undershot, breastshot, floating, tide and verticle-axis water wheels: applications such as grain grinding, water lifting, pumping, etc. 0410

TITLE: WORK PROGRAMME FOR THE REGIONAL NETWORK OF SMALL HYDRO POWER (RN-SHP) AT THE HANGZHOU REGIONAL CENTRE (HRC).
AUTHOR: Indacochea, Enrique
CONFERENCE: WORKSHOP ON SMALL HYDRO-POWER, 3RD, RCTT/UNIDO/REDP/GOVERNMENT OF MALAYSIA, KUALA LUMPUR, 1983
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1983. ii, 43 p.,
DOCUMENT NO.: UNIDO-ID/WG.403/28
SUBJECT: Activities in China promoting regional cooperation in small hydroelectric power generation - (1) draft outline of work programme at a centre (2a) concept, objectives and strategy (b) scope of activities and expected results; projects to be started 1983-1984; projections to 1986 (c) technical assistance, research and development, training, information services, material resources. Appends project profiles 0411

TITLE: Working pelton wheel
AUTHOR: Meinikheim, F.
SOURCE:
SERIES: Alternative Sources of Energy (A.S.E.) (Milaca, MN, USA), October 1977, pp. 12-15
SUBJECT: Mini-Hydroelectric power
Pelton /water wheels/ 0412

TITLE: Young mill-wright and miller's guide
AUTHOR: Evans, O.
SOURCE: New York, NY, USA, Arno Press, 1972. 400 p.
SERIES: Reprint of 1850 edition published by Technology and Society Series
SUBJECT: Mini-Hydroelectric power
A classic work on the construction, mechanics, and use of different types of water wheels. 0413

TITLE: YUGOSLAV EXPERIENCES, ACHIEVEMENTS AND POSSIBILITIES OF CO-OPERATION WITH DEVELOPING COUNTRIES IN THE AREA OF MINI-HYDROELECTRIC GENERATION UNITS.
AUTHOR: BEKIC D
CONFERENCE: SEMINAR-WORKSHOP/STUDY TOUR IN THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY FOR MINI-HYDRO POWER GENERATION (MHG), 2ND, HANGZHOU AND MANILA, 1980.
CORPORATE NAME: UNIDO.
SOURCE: Vienna, 1981. 13 p.,
DOCUMENT NO.: UNIDO-ID/WG.329/19
SUBJECT: Mini hydroelectric power generation in Yugoslavia - (1) background; need for decentralization of power generation; micro and mini plants (2) the Yugoslav approach, social aspects and economic aspects (3) institutional framework (4) case study of the Tolmin commune, Slovenia 0414

TITLE: Zumbro hydroelectric project: installation of third unit. Feasibility report
AUTHOR: Beck, R.W.
SOURCE: Washington, D.C., USA, US Dept. of Energy, 1979. 139 p.
DOCUMENT NO.: NTIS:DOE/ID/01773-1
SUBJECT: A third generating unit at an existing hydro power plant near Rochester, Minnesota is recommended.
Mini-Hydroelectric power 0415

AUTHOR INDEX

CORPORATE NAME INDEX

CONFERENCE INDEX

Energy Technology Conference, 6th, Washington, DC, USA, 26-28 February 1979
0015

ESCAP/UNEP Environment and Development: Regional Seminar on Alternative Patterns of Development and Life-styles in Asia and the Pacific, Bangkok, Thailand, 14-18 August 1979
0083

First Latin American Seminar on Small Hydro Power Stations, November, 1980, Girardot, Colombia
0086

Hydropower and Transmission 8th Environmental Conference, Lake Champlain, NY, USA, 9-10 June 1981
0084, 0390

IEEE Power Engineering Society, Winter Meeting, Atlanta, GA, USA, 1 - 6 February 1981
0179

IEEE/ASME/ASCE Joint Power Generating Conference, Charlotte, NC, USA, 7-11 October 1979
0138

IEEE/ASME/ASCE Joint Power Generation Conference, Phoenix, AZ, USA, 28 September-2 October 1980
0014

International Conference of Cybernetic Societies, Denver, CO, USA, 8-10 October 1979
0242

International Conference on Renovation and Expansion of Water Power Stations, Zurich, Switzerland, 27 February-2 March 1979
0211

INTERNATIONAL FORUM ON APPROPRIATE INDUSTRIAL TECHNOLOGY, NEW DELHI AND ANAND, INDIA, 1978
0148

International Symposium on Water Resources Systems, Roorkee, India, December 1980. Proceedings, Special Session on Small Scale, Low Head and Hybrid Micro Hydel Generation
0149

SUBJECT INDEX