

CONTENT

SHP Worldwide

The 20th Congress of the World Energy Council will be held in November 2007

Hydro 2007 will be held in Granada, Spain, 15-17 October

Upcoming Small and Medium Hydro Workshop At Waterpower XV, July 24, 2007

SHP in China

Situation and tasks of China's waterpower resources management and rural hydropower development in 2007

HRC News

HRC's training program for 2007

HRC's Project has Passed Acceptance

HRC's Design Institute Signed Contract with Vietnam

HRC Delegate Attended the Follow-up Training Seminar in South Africa

HRC Successfully held SHP Training Workshop for Mongolia

Documents & Reports

Small hydropower development in Nigeria

Report on the Training Workshop on SHP for Mongolia

Publications

Small Hydropower—a text book specially designed for training workshop on TCDC program

A New Book Forenotice: World Energy Outlook 2007

SHP Worldwide

The 20th Congress of the World Energy Council will be held in November 2007

The 20th Congress of the World Energy Council will be held in November 2007 in Rome and preparations are well underway with sponsors, exhibitors and venues already lined up.

Every three years, WEC holds a World Energy Congress. The Congresses are recognized as the world's premier multi-energy event and often attract upwards of 5,000 delegates, including WEC members, energy industry leaders, government ministers, heads of international organizations, academics, the media and individuals interested in sustainable energy development. The Congresses feature a major energy exhibition, keynote addresses by recognized political and business leaders, roundtables on major energy themes and issues, hundreds of technical paper presentations by energy experts, and a unique opportunity for participants to come together and discuss the future of the industry.

Source: WEC

Hydro 2007 will be held in Granada, Spain , 15-17 October

Hydro 2007 will be held in Granada, Spain, on 15-17 October this year. The theme of hydro 2007 is "new approaches for a new era". It is hosted and organized by the International Journal on Hydropower & Dams, Network Events Limited, ICOLD, ESHA, IEA, etc.

This international gathering of the world hydropower community will focus on practical ways of advancing hydropower development for both developing countries and developed countries. More than 70 countries are expected to be present. High-level delegations from all countries will meet to exchange experience and to enhance international collaboration.

Source: <Hydropower & Dams

Upcoming Small and Medium Hydro Workshop At Waterpower XV, July 24, 2007

The International Energy Agency (IEA) Small Hydro Annex II and Canada Centre for Energy Technology (CETC) presents:

Small and Medium Hydro Workshop At Waterpower XV, July 24 1, 2007 in Chatanooga, Tennessee, U.S.A.

Learn about the opportunities and challenges associated with small and medium hydro development and find out about emerging development trends. Useful information, tools, and case studies will be shared and participants will be encouraged to network to share best practices and lessons learned. The workshop is designed for investors, developers, small hydro designers, and owners of small to medium hydro facilities.

Website for more information: www.hcipub.com/wp/activities.asp

Source: international small-hydro Atlas

SHP in China

Situation and tasks of China's waterpower resources management and rural hydropower development in 2007

Mr. Tian Zhongxing is the Director of Rural Hydropower and Development of Electrification Bureau under the Ministry of Water Resources. This article is published in the magazine <China Waterpower and Electrification> 2007 No.1/2 in Chinese. The following is an excerpt of this article.

1. Situation of waterpower resources management and rural electrification

Rural hydropower keeps rapid development. By the end of 2006, the total installed capacity reached 50GW, which occupied 37% of total hydropower capacity in the country. Thus, rural hydropower has formed an important part of state power supply.

By now, <"Eleventh Five-year" and 2020 plan of national hydropower-based rural electrification> has been prepared and approved. Another 400 counties will further be chosen to carry out the rural electrification construction.

The scope and scale of the project "Small Hydropower Replacing Firewood" has been expanded. <2006-2008 plan for the ecological protection program to replace firewood with small hydropower.> has been approved, which covers 21 provinces, 81 project areas and 636,000 population with a planned installed capacity of 150,000kW, and will also drive the rural infrastructure construction.

Waterpower resources management has gained initial success. The administrative function of hydroenergy resources for water authorities of more than 10 provinces have been identified, and related policies and rules issued. Exploitation right of waterpower resources should be obtained through tender or transferred by payment. The collected capital from the resources should be used for river treatment, ecological compensation and benefit conflict disposal, etc.

Order of rural hydropower construction management gradually turns better. Banning of irregular exploitation and clearing of illegal hydropower stations continue. Some policy documents are released, such as <Issues on Enforcing Management of Rural Hydropower Construction> and <Environment Protection Management Issues on Rural Hydropower Construction>. These documents have identified concrete requirements of rural hydropower station planning, design, government approval, construction, check and examination, security, environment protection, etc.

2. Challenge and countermeasure

We have to face the challenge of fulfilling the target of "Eleventh Five -year Plan" of rural hydropower development, because there are still some problems which affect the development. The first problem is that we have confused the hydroenergy resources management with hydropower construction management, which caused the absence of resources management . The second problem is that central government financial assist is not enough for those poor areas. The third problem is that rural hydropower legislation has no substantial progress. The fourth problem

is that self-construction of rural hydropower sector needs to be strengthened.

To solve all above problems, premier Wen Jiabao pointed out, “small hydropower exploitation should follow correct direction and policy, combine with peasant’s benefit, local development, environment protection and ecological construction, and take a way of scientific, well-ordered and sustainable development.” Therefore, we should promote the development of “SHP Replacing Firewood Program”, pay more attention to integrated benefit of SHP, reduce the negative environmental impact as far as possible, maintain river health, put more importance on farmer’s benefit, increase their income and improve their living condition.

3. Tasks of hydroenergy resources management and rural hydropower

“Eleventh Five-Year Plan” is a period of strategic opportunity for rural hydropower development. In 2007, rural hydropower development should be continued and strengthened according to the spirit of the central government’s No.1 document and instruction of Premier Wen Jiabao. Waterpower resources is an important part of water resources. As water administration department, we should emphasize and firmly hold on to the strengthening of hydroenergy management, banning of disorderly exploitation, expediting legislation of hydroenergy resources and rural hydropower, solid advance of SHP-based rural electrification and program of SHP replacing firewood and improvement of administration capability for the whole section..

We will take action for pushing the waterpower resources management. Gradually smooth the institutional system of management, setting up the system of paid exploitation of water power resources and market-oriented distribution. Take steps to set up waterpower resources sector in river basin authorities, enforcing the waterpower resources management and planning, combining the river basin integrated planning, start the planning for river basin waterpower. Continue to carry out the national waterpower resources investigation and evaluation.

The target of rural hydropower construction for 2007 is to install new capacity of more than 6GW, and keep about 20GW under construction; to improve national waterpower management system, to gradually set up sound operation mechanism of waterpower exploitation and protection; to start the legislation of <Statute on Rural Hydropower> and <Statute of Waterpower Resources Management>, to coordinate with other related power legislation, and to release adaptable policy of <Renewable Energy Law> for small hydropower. We should firmly carry out the “Eleventh Five-year Plan” for construction of counties of hydropower rural electrification, and start the demonstrative projects of expanded “SHP Replacing Firewood”. Continue to rule the rural hydropower construction order, promote the level of rural hydropower security and management, and continue to push the rural hydropower modernization.

The importance of rural hydropower management is to stipulate the construction order and operation security. We should strengthen the management of every step of rural hydropower construction, and especially be strict with project technical examination, environmental impact pre-examination, standardize construction procedures, and enforce the supervision and administration of construction process. Supervision and management system for rural hydropower operation security should be improved, and classified security registration should be the necessary term for power business license. The grid of rural- hydropower- supplied areas must be continuously promoted. We should also promote the technical level of rural hydropower industry by improving the technical standard system, putting into effect the <Instruction of Rural Hydropower Modernization>.

HRC News

HRC's training program for 2007

For 2007, at least two international training workshops on small hydropower will be conducted by HRC. They are:

1. TRAINING WORKSHOP ON SMALL HYDROPOWER

Time: 17 May --25 June 2007

Venue: Hangzhou, China

Language: English

2. STAGE DE FORMATION POUR L'AFRIQUE SUR LES PETITES CENTRALES HYDRO-ELECTRIQUE

Time: 16 Aug—24 Sept 2007

Venue: Hangzhou, China

Language: French

All the lodging, boarding, domestic transportation, training fees with pocket money 30 Yuan per day per person will be borne by the Chinese government. Those interested may contact with and apply from the Commercial Office of the Chinese embassy.

For more information, please contact HRC Secretariat:

Hangzhou Regional Center for Small Hydropower

122 Xueyuan Road, Hangzhou, P.R. China, 310012

Phone: 0086-571-56729285; 88086586

Fax: 0086-571-88062934

E-Mail: hrc@hrcshp.org , dqpan@hrcshp.org

HRC's Project has Passed Acceptance

---The project <Unmanned Automatic Controlling System for Rural Small Hydropower Stations> entrusted by the Chinese Ministry of Science & Technology and undertaken by HRC has passed the acceptance recently conducted by the Department of International Cooperation & Science-Technology, Ministry of Water Resources.

The project has improved the former unmanned automatic controlling system developed by HRC. The system has now become more reliable, economical and practical. Unmanned or fewer personnel on duty reduces the cost of operation for the SHP station.

During the implementation phase of the project, pilot stations have been set up, personnel trained, 37 sets of unmanned automatic controlling system for 16 SHP stations have been completed. Meanwhile, the equipment has been exported to Peru, Turkey, Vietnam, Mongolia and etc. The experts all believe that the project has high practical value and bright prospect for application. (2007-03-26)



HRC's Design Institute Signed Contract with Vietnam

A technical contract <Bidding design & detailed construction design for Thai An SHP Station in Vietnam> has been signed recently between HRC's Design Institute and Thai An Hydropower Corp.

Thai An SHP Station lies near the boundary between Vietnam and China. Its preliminary work and preliminary design has been done by the First Electric Design Institute of Vietnam. The contract signed defines the follow-up designing work to be taken by HRC's Design Institute, to optimize the original designing scheme based on the preliminary design and then complete electro-mechanical and civil design for bidding, together with the detailed construction design. The project is scheduled to put into operation by the end of 2009. (2007-03-26)

HRC Delegate Attended the Follow-up Training Seminar in South Africa

The Follow-up Training Seminar of 2006 Management of Hydropower was held in South Africa during 25-30 March 2007, which was hosted by Vattenfall Power Consultant AB, Sweden, and with Eskom, Peaking Generation, Cape Town, South Africa as the local host. All the expenses including the international air tickets, the lodging, boarding, domestic transportation and the training fees were covered by the Swedish International Development Cooperation Agency (Sida). At the invitation from Eskom, HRC delegate, Ms. Shen Xuequn attended the event, in which, 4 lecturers from Sweden and 24 engineers from 19 countries all over the world were involved in total.

As Part II of the training programme, the seminar focused on the evaluation of participants' "Plan of Action ---- Report & Result". Based on the first part training held in Sweden last year and with the continuous efforts made in the six months from October 2006 to March

2007, so far, fruitful results have been achieved respectively by the participants. The presentation from HRC was highly evaluated by the whole group. It detailed the updated measures and the improved management of 2006 Training Course on Small Hydropower, which was conducted successfully in HRC from 18 December 2006 to 8 February 2007. In addition, the tentative work plan for further development was also put forward in the seminar.

In accordance with the objectives of the training seminar, site visits were arranged to some of the famous local hydropower stations in South Africa.

During the re-union of the group with members from 20 countries, technical and cultural exchange was widely made and the friendship further strengthened. With mutual understanding and common aim, it is expected that the group would make further contribution together to the global hydropower development in future. (2007-04-12)

HRC Successfully held SHP Training Workshop for Mongolia

The 15-day "SHP Training Workshop for Mongolia" was successfully concluded on April 24, 2007 in HRC. The training period was not very long, however, it has pretty substantial and practical content, which are designed and arranged specially for the administrative and technical staff from the two Mongolian hydropower stations. The training course was highly evaluated by the participants.

During the training, besides the lectures on basic theory and key technology for SHP station, the detailed case study on turbine and electrical part of Taishir Hydropower Station were made respectively. In addition, the on-site visits have been also paid to the related hydropower equipment manufacturers and hydropower stations.

At the closing ceremony, the HRC leaders gave praises to the Mongolian participants for their earnest and assiduity, and sincerely congratulated them on having achieved the fruitful results. The directors of Taishir and Durgun Hydropower Stations addressed respectively to express their heartfelt thankfulness for everything HRC had done for them, including all the professional organization and considerate arrangement. Cherishing the profound friendship between the two sides, the Mongolian friends said that they would like to explore more cooperation with HRC in future. (2007-04-25)

Documents & Reports

SMALL HYDROPOWER DEVELOPMENT IN NIGERIA

By

AJANI, Emmanuel A.

National Agency for Science & Engineering Infrastructure (NASeni)

(Federal Ministry of Science & Technology)

Idu Industrial Area, P.M.B. 391, Garki, Abuja., Nigeria.

www.naseni.org

TABLE OF CONTENT

1. Introduction
2. Electric Power Generation in Nigeria
 - 2.1 History of Electric Power Generation in Nigeria
 - 2.2 Current Power Demand and Generation in Nigeria
 - 2.3 New Policy on Power Generation
3. Small Hydropower in Nigeria
 - 3.1 Small Hydropower Potentials in Nigeria
 - 3.2 Status of Small Hydropower utilization in Nigeria
 - 3.3 On-Going Small Hydropower Projects
 - 3.4 Future Plan for Small Hydro
4. Development Strategy
 - 4.1 NASeni Project on Small Hydropower
 - 4.2 Methodology
 - 4.3 Incentives for Investment

- 4.3.1 Industrial Sector
 - 4.3.1.1. Taxation
 - 4.3.1.2 Investment Guarantees/Effective Protection
 - 4.3.1.3 . Access to Land
- 4.3.2 Energy Sector

5. Conclusion

REFERENCES

1. Introduction

The United Nations in an attempt to stem the tide whereby most of the world's population live in abject poverty and a few swim in opulence declared the Millennium Development Goals (UN-MDGs). 189 nations pledged to achieve the following by 2015:

- Eradication of extreme poverty and hunger;
- Achievement of Universal Primary Education;
- Promotion of gender equality, women empowerment;
- Reduction of child mortality;
- Improvement of maternal health;
- Combat HIV/AIDS, malaria and other diseases;
- Ensure environmental suitability;
- Developing global partnership for development.

Lack of electricity or constant supply of electricity has been found to be a major cause of lack of development and limited wealth generation abilities of many communities. Where electric power supply is available and constant, the growth of cottage and small scale industries have resulted in improved life styles and economies of such communities. In Nigeria, many communities are still not connected to the National Grid. Even in the regions connected to the grid, there is a deficiency in power supply. By 2006, generation capacity was 3800MW, while the average national electric power demand stood at 9,800 MW. About half of the Nigerian population are still without electricity. In order to achieve the Millennium Development Goals (MDGs), bringing improved energy services to these communities becomes a priority.

The thrust of policy makers in Nigeria and the world over is to promote a healthy energy-mix. Various renewable energy sources like solar photovoltaic, wind energy, hydropower e.t.c. are being promoted. Small Hydro Power (SHP) plants are easier to install and manage (as against large Hydro Power installations) and may not require very high investments in transmission lines especially when used in the isolated mode, since the end-users are relatively close to the source of generation of the electricity.

The objectives of this report are to:

- 1) Explore the developing of Electric Power Generation in Nigeria
- 2) Review the status and future plans for the development of Small Hydropower in Nigeria
- 3) Discuss the development strategy for Small Hydropower in Nigeria

2. Electric Power Generation in Nigeria

2.1 History of Electric Power Generation in Nigeria

In 1866 two small generating sets were installed to serve the Colony of Lagos. The Electricity Corporation of Nigeria (ECN) was established in 1951 to run the power supply systems in the country. The Niger Dam Authority (NDA) was established in 1962 in order to generate hydroelectric power at Kainji, on the River Niger. NDA and ECN were merged in 1972 to form the National Electric Power Authority (NEPA). NEPA then, was fully in charge generation, transmission and distribution of electricity throughout Nigeria. During these periods many power stations were built. Starting with the 30MW thermal plant at Oji in 1956 to the first hydropower station at Kainji in 1968 with an installed capacity of 320MW to the 500MW natural gas-fired thermal plant in Delta state in 1990, Nigeria had a total installed capacity of 5981.6 MW.

In March 2005, the Electric Power Sector Reform Act was passed which gave rise to the establishment of Power Holding Company of Nigeria (PHCN) to replace NEPA. The Nigeria Electricity Regulatory Commission (NERC) was also established in the same year to serve as an independent regulatory agency.

By December 2005, only 9 power stations with a combined installed capacity of 4681MW were functioning, made up of 7 PHCN stations and 2 other stations operated by independent power producers.

2.2 Current Power Demand and Generation in Nigeria

By 2006, electricity generation capacity was 3,800 MW while the average national electric power demand stood at 9,800 MW.

The reform in the power sector has opened up the sector and this has encouraged the participation of the private sector in the generation and distribution of power. The independent power producers are now building power stations; some have been commissioned while the others are in various stages of completion. The government however did not leave everything in the hands of the private investors as it has embarked on building more power stations which on completion will boost the power available for distribution. The Federal Government of Nigeria is currently spending a total sum of US\$ 3 billion to meet a 10,000MW target by the end of 2007. A total of 12 new power stations are being built by the government. They include new thermal power stations at: Geregu, Kogi State (414 MW), Papalanto, Ogun State (335MW), Omotosho, Ondo State (335MW), and Alaoji (310MW) in South Western Nigeria, Ikot Abasi in Akwa Ibom State (two stations:188MW + 300MW), Sapele in Delta State (451MW), Omoku in Rivers State (230MW), Egbema in Imo State (338MW), Ihuabor (451MW), Calabar in Cross River State (561MW) and

Gberian/Ubie (225MW).

In addition, in July 2006 the government agreed to start work on the Mambilla hydropower project, which is expected to generate 2600MW, and will be financed with loans from China, the Islamic Bank, and funding from the Federal Government of Nigeria.

2.3 New Policy on Power Generation

In order to remove the constraints of the power sector and achieve sustainable and affordable electric power supply for Nigeria, comprehensive reforms of the power sector have been articulated. The goals and objectives of the reform, stated in the National Electric Power Policy (NEPP) are to:

1. Improve the efficiency and affordability of power supply.
2. Encourage private sector participation and competition.
3. Attract private investment.
4. Establish an independent regulatory agency to ensure level playing feild for all stakeholders.
5. Provide a conducive environment for long term development of the sector.

The fundamental objective of the reform is to “ensure that Nigeria has an electricity supply industry that can meet the needs of its citizens in the 21st century”. Other objectives are to “modernize and expand electricity coverage” and “to support national economic and social development”.

The NEPP forms the basis of the provisions of the Electric Power Sector Reform Act (EPSR) which was enacted in March 2005. The Act provides for:

1. The unbundling of the defunct NEPA and the establishment of successor companies (Part I).
2. The development of a competitive electricity market (Part II).
3. The establishment, functions and powers of the regulatory commission (Parts III – VII).
4. The establishment of Consumer Assistance Fund to subsidize under-privileged electricity consumers (Part VIII).
5. The establishment of Rural Electrification Agency and Fund to increase rural access to electricity (Part IX).

3. Small Hydropower in Nigeria

In Nigeria, 30MW has been adopted as the maximum rating for small hydropower. Mini hydros are those with installed capacity of less than 1MW and micro hydro for those with capacities less than 100KW.

3.1 Small Hydropower Potentials in Nigeria

From a 1980 survey of 12 of the old States of the Federation, as shown in Table 1, it was established that about 964MW of Small Hydropower (SHP) can be harnessed from 277 sites. The potential would of course increase when the rest of the country is surveyed. It is presently estimated that the total SHP potential could reach 3,500 MW, representing 23% of the country's total hydropower potential.

Table 1: Small Hydro Potential in Surveyed States of Nigeria

S/No	State (pre-1980)	River Basin	Total No. of Sites	Total Capacity (MW)
1	Sokoto	Sokoto-Rima	22	30.6
2	Katsina	Sokoto-Rima	11	8.0
3	Niger	Niger	30	117.6
4	Kaduna	Niger	19	59.2
5	Kwara	Niger	12	38.8
6	Kano	Hadeija-Jamaare	28	46.2
7	Borno	Chad	28	20.8
8	Bauchi	Upper Benue	20	42.6
9	Gongola	Upper Benue	38	162.7
10	Plateau	Lower Benue	32	110.4
11	Benue	Lower Benue	19	69.2
12	Rivers	Cross River	18	258.1
Total			277	964.2

3.2 Status of Small Hydropower in Nigeria

The total installed capacity of existing small hydropower schemes in Nigeria stands at 30MW as listed in Table 2. Seventy percent (70%) of this total (or 21 MW) is generated from 6 sites in Plateau State by the Nigerian Electricity Supply Corporation Ltd. (NESCO) an existing Independent Power producer (IPP).

Table 2: Existing Small Hydro Schemes in Nigeria

S/No	River	State	Installed Capacity (MW)
1	Bagel I	Plateau	1.0
	Bagel II	Plateau	2.0
2	Ouree	Plateau	2.0
3	Kurra	Plateau	8.0
4	Lere I	Plateau	4.0
	Lere II	Plateau	4.0
5	Bakalori	Sokoto	3.0
6	Tiga	Kano	6.0

Total	30.0
--------------	-------------

3.3 On-Going Small Hydropower Projects

Currently, the Federal Government of Nigeria is working on the following small hydro projects:

- 1) Generation of 30MW from Dadin-Kowa. The civil work is already completed and some of the electromechanical equipments also installed.
- 2) Generation of 1MW from the Obudu cattle Ranch. The feasibility study will be completed by May 2007.
- 3) A micro pilot project to generate 40KW at Ehvboro in Edo State

3.4 Future Plan for Small Hydro

It is presently estimated that the total SHP potential could reach 3,500 MW, representing 23% of the country's total hydropower potential. The projection is that by 2015 at a generation capacity of 15,000MW, 5% of this capacity will come from renewable energy and 70% of that 5% from small hydro.

4. Development Strategy

In order to make small hydropower (SHP) viable in Nigeria, there is a need to minimize optimally, the investment cost through the:

1. Integration of SHP projects with other water resources projects
2. Development of local capacity in construction techniques and equipment fabrication.

The Federal Government through the Renewable Electricity Action Programme is giving priority to projects with "low-hanging fruits" that is, projects that will provide quick gains in achieving the targets of the programme. Priority will be given to mature technologies, cost effectiveness of projects and possibilities of building partnerships with other sectors in delivering sustainable development.

Over 30 multipurpose dams built by the Federal Ministry of Water Resources have small hydro power component designs. None of these dams are currently producing electricity. Some of the dams require minimal or no civil works and the installation of electromechanical equipment. Over the next 10 years, the Federal Ministry of Power and Steel will partner with the Federal Ministry of Water Resources in delivering power from these dams through public-private partnership that will concession these dams through competitive tenders.

Also, there are about 130 other dams which have no small hydropower component but with proper

survey, some civil works and installation of electromechanical equipment, could be used to produce electricity.

The Federal Government of Nigeria is also prioritizing the domestic production of equipment for renewable energy technologies, small hydropower inclusive, as a means of achieving a sustainable development in this sector.

4.1 NASENI Project on Small Hydropower

The National Agency for Science and Engineering Infrastructure (NASENI) was established in 1992 as a parastatal under the Federal Ministry of Science and Technology (FMST). It was set up to execute all aspects of the Science and Engineering Infrastructure Policy of the Federal Government of Nigeria. NASENI's mission is to establish and nurture an appropriate and dynamic Science and Engineering Infrastructure base for achieving home-initiated and home-sustained industrialization process through the development of relevant processes, appropriate local machine design and machine building capabilities for capital goods and equipment manufacture for job creation, national economic well being and progress.

The National Agency for Science and Engineering Infrastructure (NASENI) has initiated a Small Hydropower project with the following objectives:

- To promote the use of small hydropower as a renewable energy option for Nigeria
- To survey the feasibility of integrating small hydropower plants in the large number of dams currently used for water supply and irrigation only
- To develop local manufacturing capabilities on Small Hydropower equipment in order to achieve the Local Content Policy targets of the Nigerian Government
- To midwife the establishment of local manufacturing companies for electromechanical equipment of small hydropower plants.

4.2 Methodology

The National Agency for Science and Engineering Infrastructure (NASENI) is adopting the following programmes in order to achieve these set goals:

1. Continuous and strategic training of professionals in small hydropower technology, in order to build a critical mass of skilled professionals
2. Collaborative survey of the 160 dams currently unutilized for power generation, in order to quickly reap "low-hanging fruits"
3. Joint Venture partnering with relevant ministries, agencies, organizations, local and foreign investors towards the establishment of small hydropower plants at these sites
4. Joint Venture partnering with local and foreign investors towards the establishment of manufacturing companies for turbines and generators.

4.3 Incentives for Investment

As part of the efforts to provide an enabling environment that is conducive to the growth and development of industries, inflow of Foreign Direct Investment (FDI), shield existing investments from unfair competition, and stimulate the expansion of domestic production capacity; the Federal Government of Nigeria has developed a package of incentives for various sectors of the economy. These incentives, it is hoped, will help revive the economy, accelerate growth and development and reduce poverty.

Within the past few years following the end of military dictatorship in Nigeria, government has progressively introduced a number of incentives designed to promote investments. Some of these are grouped as follows:

4.3.1 Industrial Sector

4.3.1.1 Taxation

Fiscal measures have been drawn to provide for deductions and allowances in the determination of taxable income of manufacturing enterprises, including:

- Pioneer status, which is a concession to pioneer companies located in economically disadvantaged areas, providing a tax holiday period of five to seven years. These industries must be considered by the government, to be beneficial to the country's economy and in the interest of the public.
- Companies that are involved in local raw material development;
- Local value addition;
- Labour intensive processing;
- Export oriented activities;
- In-plant training; are also qualified for additional concessions.

Local Raw Materials Utilization

30% tax concession for five years to industries that attain minimum local raw materials utilization as follows:

- Agro - 80%
- Agro allied - 70%
- Engineering - 65%
- Chemical - 60%
- Petro-chemical- 70%

Local Value Addition

10% tax concession for five years. This applies essentially to engineering industries, while some finished imported products serve as inputs. This is aimed at encouraging local fabrication rather than the mere assembly of completely knocked down parts.

In-Plant Training

2% tax concession for five years, of the cost of the facilities for training.

Export Oriented Industries

10% tax concession for five years. This concession will apply to industries that export not less than 6% of their products.

Infrastructure

20% of the cost of providing basic infrastructures such as roads, water, electricity, where they do not exist, is tax deductible once and for all.

Investment in Economically Disadvantaged Areas

100% tax holiday for seven years and additional 5% depreciation over and above the initial capital depreciation.

Abolition of Excise Duty

All excise duties were abolished with effect from the 1st of January, 1999.

Import Duty Rebate

A 25% import duty rebate was introduced in 1995 to ameliorate the adverse effect of inflation and to ensure increase in capacity utilization in the manufacturing sector. Investors are however, advised to ascertain the current operative figures at the time of making an investment, because these concessions have undergone some amendments in the past few years.

Re-Investment Allowance

This incentive is given to manufacturing companies that incur capital expenditure for purposes of approved expansion of production capacity; modernization of production facilities; diversification into related products. It is aimed at encouraging reinvestment of profits.

Investment Tax Allowance

Under this scheme, a company would enjoy generous tax allowance in respect of qualifying capital expenditure incurred within five years from the date of the approval of the project. Dividend from companies in manufacturing sector with turnover of less than ₦100 million is tax-free for the first five years of their operation.

4.3.1.2 Investment Guarantees/Effective Protection

Transferability of Funds

Section 24 of the Nigerian Investment Promotion Council (NIPC) decree provides that a foreign investor in an enterprise shall be guaranteed unconditional transferability of funds through an authorized dealer in freely convertible currency of:

- Dividends or profit (net of taxes) attributable to the investment;
- Payments in respect of loan servicing where a foreign loan has been obtained;
- Remittance of proceeds (net of all taxes) and other obligations in the event of a sale or liquidation of the enterprise or
- Any interest attributable to the investment.

Guarantee against Expropriation

By the provision of section 25 of the same NIPC decree, no enterprise shall be nationalized or expropriated by any government of the federation, unless the acquisition is in the national interest or for public purpose; and no person who owns either wholly or in part, the capital of any enterprise shall be compelled by law to surrender his interest in the capital to any other person. These can only be done under a law that makes provision for:

- Payments of fair and adequate compensation; and
- Right of access to the courts for the determination of the investor's interest or right and the amount of compensation to which he is entitled.

In addition to all these safeguards, the Nigerian government is prepared to enter into Investment Protection Agreement with foreign enterprises wishing to invest in Nigeria.

4.3.1.3 Access to Land

Any company incorporated in Nigeria is allowed to have access to land rights for the purpose of its activity in any state in the country. It is, however, a requirement that industrial companies comply with regulations on use of land for industrial purposes and with environmental regulations. Land lease is usually for a term of 99 years unless the company stipulates a shorter duration.

4.3.2 Energy Sector

All areas of investment in this sector are considered to be pioneer product or industry. As a result, there is a tax holiday of 5 to 7 years for investments in the sector.

There has been a deregulation of this sector resulting in the emergence of Independent Power Producers (IPP).

5. Conclusion

Electric power generation and supply is still deficient in Nigeria. The Power sector is currently undergoing well articulated reforms to achieve sustainable and affordable electric power supply. Small hydro is going to play an important role in this new development having being identified as a suitable source of renewable energy. Even though the Federal Government is building more power stations, the sector has been liberalized and new Independent Power Producers (IPPs) have been licensed. There is a big and growing market for Small Hydro products. More private investments, local and foreign, are still required. Several investment incentives have been put in place, up to 7 years tax holidays for foreign investors.

For a sustainable development of small hydro in Nigeria, the development of local manufacturing capabilities of SHP equipment and local capacities in construction techniques need to be further developed.

The National Agency for Science and Engineering Infrastructure (NASeni) and other relevant

agencies, ministries and organizations are working towards creating the much needed enabling environment to achieve a sustainable development of Small Hydropower in Nigeria. However, more joint partnering (Joint Venture projects) local and foreign, are still required.

REFERENCES

- Adewoye, O.O. & Momoh, S.O. (2006) Development of a Virile Engineering Infrastructure through Endogenous Science and Technology (Local Content), Abuja.
- Adewoye, O. O. (2005) Development and Maintenance of Nigerian Engineering Infrastructure. The Nigerian Society of Engineers Annual Conference, (Kano-2005) Abuja
- Alike, E. (2006) Power Generation and the Future of Nigerian Economy. Business Day Newspaper of May 15th, 2006. Lagos.
- Eneh, K. (2007) Energy Resources in Nigeria. Federal Ministry of Power and Steel, Abuja.
- Hall, D (2006) Water and Electricity in Nigeria. Public Services International Research Unit (PSIRU). www.psiru.org
- ICEED (2006) Renewable Electricity Action Programme (REAP). International Centre for Energy, Environment & Development, Abuja.
www.iceednigeria.org
- NEUSA (2003) Investment Incentives in Nigeria. Nigerian Embassy USA.
www.nigeriaembassyusa.org/invest_incent
- Zarima, I.H. (2006) Hydropower Resources in Nigeria. Energy Commission of Nigeria (ECN) Abuja.

About the Author

AJANI, Emmanuel is a Mechanical Engineer working with the National Agency for Science and Engineering Infrastructure (NASeni), an agency under the Federal Ministry of Science and Technology of Nigeria.

E-mail ajaniae@yahoo.com , ajani.emmanuel@naseni.org

Report on the Training Workshop on SHP for Mongolia HRC Successfully held SHP Training Workshop for Mongolia

The SHP Training Workshop for Mongolia was held from 10 to 24 of April by Hangzhou Regional Center for Small Hydro Power (HRC). Attended altogether 13 participants from Mongolia. This training workshop which is the 46th international SHP training workshop conducted by HRC has been entrusted by Energy Research and Development Center, Mongolian Ministry of Fuel and Energy.

In her speech at the closing ceremony, deputy Director of HRC, Ms. Cheng pointed out: “Through your 15 days study in HRC, you have learnt some essential technology and experience related to the development of SHP which is one of the most appropriate energy forms for the vast rural areas of the developing countries. It is expected that you will play a more active role in the exploitation of SHP resources in your own country and for the benefit of your people when you are back home”.

Before conducting the training workshop, many rounds of discussions were held among HRC specialists so as to seek the optimized arrangement for the Mongolian participants. All the presentations and study tours were fit for the Mongolian actual SHP need. After the arrival of and with discussion with the Mongolian participants, further adjustments for the scheduling were made. The presentation introducing the technology and experience of SHP exploitation in China and the case studies related to the Taishir and Durgun SHP stations in Mongolia were appropriate and practical. Although the duration of the training workshop was only 15 days, all the “tailored” programs were carefully and tightly arranged. They were highly appreciated by the participants.

Most of the teachers were from HRC. The subjects included: small hydropower development in China, China in brief, low-cost and simplified civil structures, turbo-generator units and auxiliary equipment, electric equipment, case studies in technical refurbishment, electric design and computer application in SHP stations, operation and maintenance, etc. The concise and systematic courses enabled the participants to have a basic idea for every key chain in SHP operation and maintenance, laying a sound foundation for the operation and maintenance of SHP stations in Mongolia in the future.

Based on the main features of Taishir and Durgun SHP stations in Mongolia and in combination with the specific needs of the Mongolian participants, visits were arranged to Laoshikan and Xiaofeng SHP stations in Anji county and Changtan SHP in Huangyan county of Zhejiang province.

Laoshikan SHP station in Anji had a technical renovation implemented by HRC in 2004, with the present installed capacity of 3500 kW. Its safety, efficiency and ability to regulate peak and valley load were considerably increased. The adoption of micro computer supervision turned the original “operators” into “managers”, reducing many of the staff. Thus, the operation cost was decreased. Detailed discussions were conducted during the visit with the station operators in terms of social, economic and environmental benefit by SHP. Very soon, the Mongolian participants will undertake the mission of managing and operating the SHP stations in Mongolia. So, they asked a lot of questions from the operators in Laoshikan and Xiaofeng SHP stations concerning the staff

recruiting, training, regulations on work permit, on-duty, operation, taking leave, cleaning and etc.

The Changtan SHP Station that Mongolian participants visited was renovated by HRC. Its installed capacity is 11800 kW, which is much similar in terms of installed capacity, unit type and controlling equipment to Taishir SHP Station in Mongolia. Visits to such SHP stations surely benefited Mongolian participants.

Meanwhile, Mongolian participants had chance to visit Hangzhou Power Equipment Plant and Changhe Generating Equipment Co., Ltd so as understand the basic process of producing the turbo-generator units and auxiliary equipment.

Before ending the training workshop, discussion session was specially arranged by HRC for Mongolian participants and HRC's experts of various specialities were invited to the discussion. The atmosphere was more heated than expected. Many questions regarding the SHP exploitation vs protection of ecological environment were put forward. HRC staff introduced the related situation in China and shared the experience with our Mongolian participants in this aspect, especially how to score a "Win-Win" target. The answers from the HRC staff were much appreciated by Mongolian participants.

Apart from classroom presentation, discussion and study tours, sightseeing programs were arranged. Though it is virtually not possible for participants to visit all the local scenic spots only at the weekends during this training workshop, the participants were able to enjoy the main natural beauty of some scenic sites in Hangzhou. In addition, shopping at various supermarket and local bizarre were also arranged. The trip to Shanghai was an unusual experience: a look at Oriental Pearl Tower---the top in Asia, walking at night around Nanjing Street---the busied street in Shanghai and visit to Yu Garden---Shanghai's ancient town. What an exciting experience it was! Participants admired and enjoyed the whole trip.

At the closing ceremony, HRC's leaders highly appreciated the diligence and industry shown by the Mongolian participants during the training period and congratulated on the fruitful result of the study. Meanwhile, the two directors of Taishir and Durgun SHP stations in Mongolia happily expressed their gratitude respectively to HRC for the efforts made to ensure the success of the workshop and cherish the friendly and cooperation relation with HRC, expecting more collaboration with HRC in the future. HRC presented a souvenir to every participant: a pen-driver of 1 GB which contains all the presentations by HRC's lectures and photos reflecting activities of this SHP training workshop.

At the farewell party, Mongolian participants sang many of the enchanting and melodious songs, expressing their enjoyment, happiness and friendship with HRC staff.

Finally, HRC would like to express its thanks to Mr P.Baatar who provided good interpretation for the whole training workshop.

According to the questionnaires collected, nearly all of the participants regarded that such SHP training workshop held by HRC were beneficial to them and all the subjects arranged by HRC were satisfactory. Based on earnest analysis and summary, HRC will continuously improve its quality of implementing such international training workshops and score better result in the future.

According to contract, HRC will hold another SHP training workshop for Mongolian operators at the end of June with duration of one month. Altogether 21 Mongolian participants will come to Hangzhou to attend it.

By now the SHP Training Workshop for Mongolia has ended and let it be the new start of

more future SHP cooperation with Mongolia!

(By HRC Secretariat, 5 May 2007)

New Publications

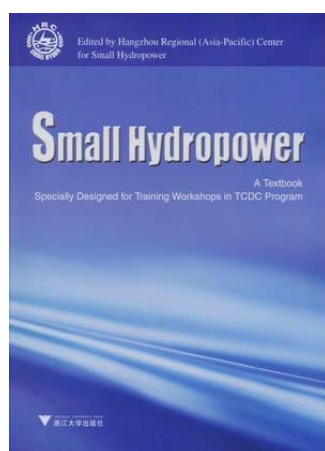
Small Hydropower——a text book specially designed for training workshop on TCDC program

This book is edited by HRC and sponsored by special publication fund of Nanjing hydraulic institute. It is prepared for the SHP training workshop of TCDC program. Till now, HRC has organized 42 workshops attended by more than 800 participants from about 80 countries, some of which have been sponsored by the UN organization while some others by Chinese government.

The main content of this book includes: general surveys, small hydropower exploitation and small river planning, hydrology and hydroenergy design, geologic problems in small hydro, civil works of small hydro, small hydraulic turbine and its auxiliary, electrical system of SHP, computer application in SHP stations, economic and financial appraisal, and appendix of five special topics.

We believe it would not only be valuable to the trainees in the future training workshop, but also be of reference to all SHP works over the world even including administrative persons and decision makers in the SHP field.

The price is 50 Yuan RMB. For more information, please contact Ms. Xuequn Shen through E-mail: xqshen@hrcshp.org



A New Book Forenotice: *World Energy Outlook 2007*

The annual World Energy Outlook is the leading source for medium to long-term energy market projections and analysis and has achieved widespread international recognition.

World Energy Outlook 2007 will focus on the outlook for energy markets in China and India and on the resulting implications for global markets. More detailed separate models will be developed for these two important developing countries. This will allow more comprehensive analysis of future energy developments, depending on policy choices and other factors affecting the demand and supply of individual fuels and technologies. Issues of key importance include the prospects for oil and gas demand/supply balances and import requirements, for indigenous coal

supply, for the fuel mix in power generation, for energy-investment flows and for local, regional and global pollution levels. The report will provide a framework for policy makers and industry, based on robust quantitative analysis.

See details in <http://www.worldenergyoutlook.org/>

