

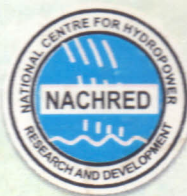
DEVELOPMENT OF A NATIONAL DATA BANK FOR HYDROPOWER RESOURCES AND FACILITIES.

K. Oje
M. K. Garba

TECHNICAL REPORT

NO. 5

ISBN: 978-978-915-053-3



**NATIONAL CENTRE FOR HYDROPOWER
RESEARCH AND DEVELOPMENT**

ENERGY COMMISSION OF NIGERIA

UNIVERSITY OF ILORIN, ILORIN, NIGERIA.



MAY, 2011

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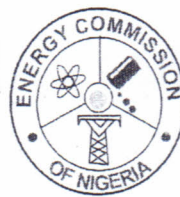
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NATIONAL CENTER FOR HYDROLOGICAL RESEARCH AND DEVELOPMENT, UNIVERSITY OF ILORIN, ILORIN, NIGERIA

PROJECT:

Development of a National Data Bank for Hydropower Resources and Facilities

OBJECTIVE:

The project aims at identifying Hydropower Resources and Facilities within the country, characterizing them and developing a data bank for them that could be reached by all interests anywhere in the world

SPECIFIC OBJECTIVES:

1. Identification of Hydropower Resources and Facilities within Nigeria
2. Visits to these resources and facilities to confirm their existence and collect relevant data on them.
3. Characterization and categorization of data from the facilities on the bases of Region, State and Capacity.
4. Development of a Computer Program that will facilitate the storage of collected data as well as any new data subsequently generated.
5. Development of a website that will facilitate access to the data by any individual or interest that is interested in such data.
6. Presentation of the potentials of the hydropower resources and facilities at National and International forums to stimulate interest in their further development and use

METHODOLOGY:

The following activities were to be carried out:

1. Identification, from records and other sources, of the different hydropower resources and facilities in Nigeria
2. Visitation to these sites for on-site assessment and collection of data
3. Characterisation of data
4. Categorization of data with respect to Capacity, State and Region of location
5. Development of a software for recording data collected and future data to be collected
6. Development of a website for data access
7. Data presentation

The methodology proposed above were carried out as follows:

1. Identification of Hydropower Resources

Hydropower resources and potential resources were identified as dams and waterfalls. However, data is only mostly available on dams. Major hydropower dams include Jebba Dam, Kainji Dam and Shiroro Dam. There are other dams scattered all over the country but most are used for irrigation and water supply. These dams were also recorded since they have the potential of developing into micro power supply centers.

2. Visitation for Data Collection and Observation

In order to acquire relevant data visits were made to the following institutions and dams:

- i. Jebba Hydro Electric Power PLC
- ii. Benin-Owena River Basin Development Authority, Akure
- iii. Ogun-Osun River Basin Development Authority, Abeokuta
- iv. Lower Niger River Basin Development Authority, Ilorin
- v. Ministry of Water Resources, Ilorin, Kwara State
- vi. Yemoji Dam, Ijebu-Ode, Ogun State
- vii. Asejire Dam, Oyo State
- viii. Eleyele Dam, Ibadan, Oyo State
- ix. Erinle Dam, Ede, Osun State
- x. Omu-Aran Dam, Kwara State
- xi. Adiyari Dam, Ogun State

Most of the data on dams were obtained from the Compendium on dams compiled by the Federal Ministry of Water Resources, Abuja. The Data is summarized in Appendix 1.

3. Characterization of Data

Characterization of data was done in conjunction with categorization

4. Categorization of Data

Categorisation of data with respect to Capacity, State and Region of location. The data was analysed with Microsoft Excel to categorize along the parameters chosen

5. Software Development

Software for data recording and display was written for Internet display using Microsoft

Visual Web Developer.net.. This program was hosted on the internet so it can be accessible to all intending users.

6. Development of a website for data access

A website was designed and hosted for the software developed above. This enables users to access the software 24/7. The website address is nachred.eduregister.com

7. Data presentation

The data is presented in this report.

RESULTS

1. Characterization and Categorisation of Data

Data was analysed on the following characteristics:

a) State of Domicile

From the analysis of data, it was discovered that 31 out of the 36 states as well as FCT have one or more dams. States that have no recorded dams include Delta, Yobe, Anambra, Bayelsa and Lagos. There are a total of 192 dams recorded. Figure 1 shows the dam distribution by state.

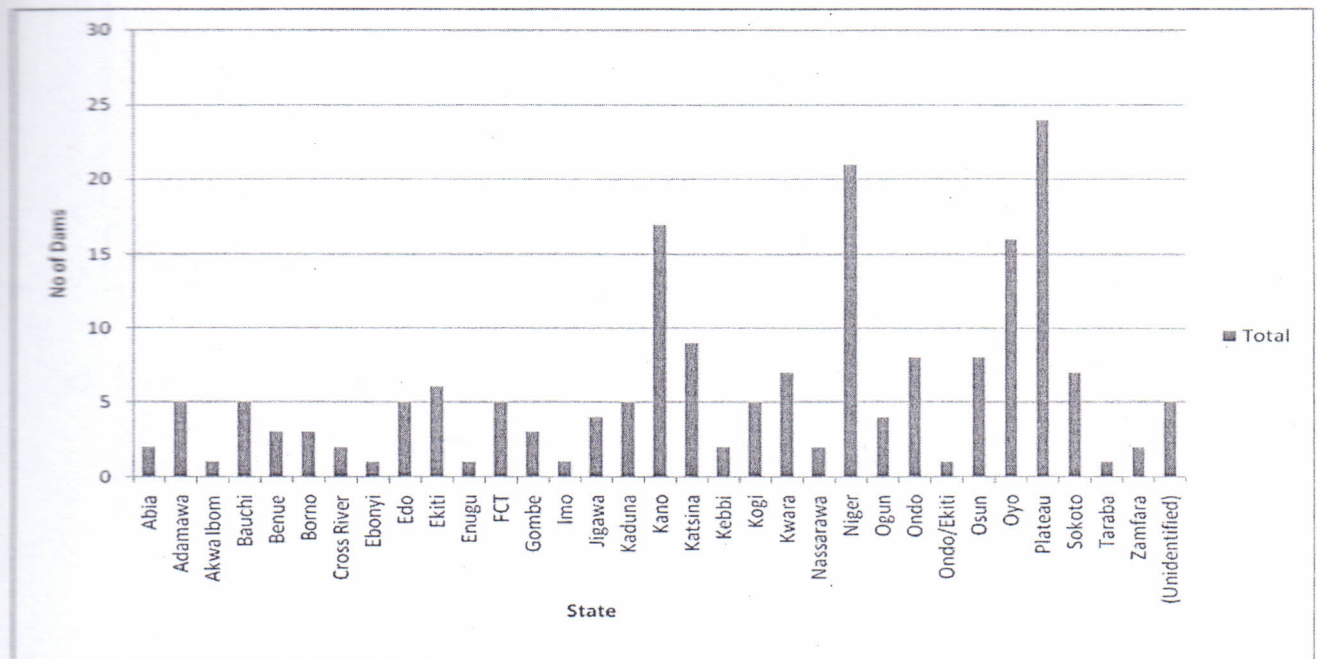


Figure 1: Nigerian Dams Distribution by State

Plateau state has the highest number of dams (24) followed by Niger (21), Kano (17) and Oyo (16). Every other state has less than 10 dams. Table 1 shows the exact number of recorded dams for each state and the Federal Capital Territory.

b) Regional Distribution

The North Central (62), North West (54) and South West (43) have the largest concentration of dams while the other regions have marginal presence (Figure 2)

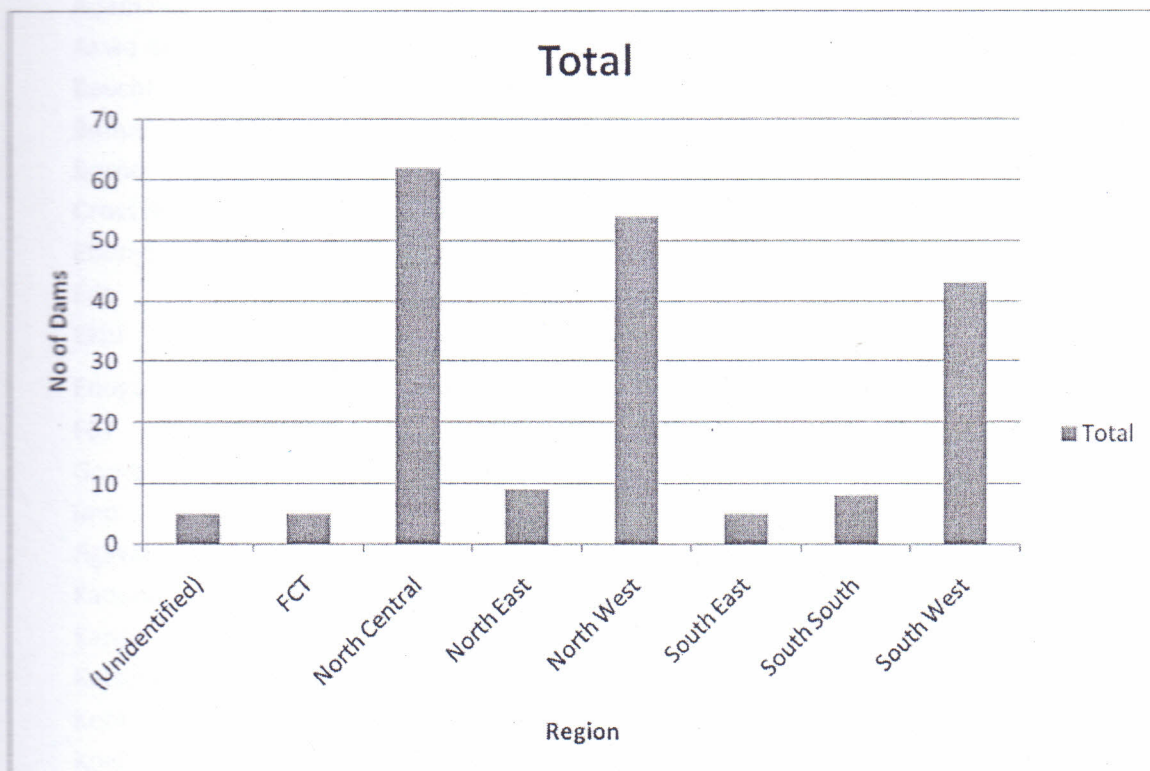


Figure 2: Regional Distribution of Dams

c) Dam material

The distribution of the material used to construct the dams are showed in Figure 3. Majority of the dams are earthfilled while homo and concrete also play a significant role.

Table 1: Nigerian States and their number of Recorded Dams

State	No of Dams
Abia	2
Adamawa	5
Akwa Ibom	1
Bauchi	5
Benue	3
Borno	3
Cross River	2
Ebonyi	1
Edo	5
Ekiti	6
Enugu	1
FCT	5
Gombe	3
Imo	1
Jigawa	4
Kaduna	5
Kano	17
Katsina	9
Kebbi	2
Kogi	5
Kwara	7
Nassarawa	2
Niger	21
Ogun	4
Ondo	8
Ondo/Ekiti	1
Osun	8
Oyo	16
Plateau	24
Sokoto	7
Taraba	1
Zamfara	2
(Unidentified)	5
Grand Total	191

```

•      <p>
•    </p>
•      <asp:HiddenField ID="CurrentDam" runat="server" />
•      <asp:AccessDataSource ID="AccessDataSource1" runat="server"
•        DataFile="~/DataBases/Dams.MDB"
•        SelectCommand="SELECT * FROM [Dams] WHERE ([DamID] = ?)">
•        <SelectParameters>
•          <asp:ControlParameter ControlID="CurrentDam" Name="DamID"
•            PropertyName="Value" Type="String" />
•        </SelectParameters>
•      </asp:AccessDataSource>
•    </asp:Content>
•

```

Dams.aspx.vb

```

1.  i»¿
2.
3.  Partial Class MainSite_Dams
4.
5.      Inherits System.Web.UI.Page
6.
7.
8.      Protected Sub Page_Load(ByVal sender As Object, ByVal e As
System.EventArgs) Handles Me.Load
9.
10.         If Not Page.IsPostBack Then
11.
12.             If Request.Params("DamID") <> "" Then
13.
14.                 CurrentDam.Value = Request.Params("DamID")
15.
16.             Else
17.
18.                 Exit Sub
19.
20.             End If
21.
22.
23.             Dim myDataTable As New Data.DataTable
24.
25.             Dim DbOps As New DBManager.DBOperations
26.

```

```

27.         DbOps.Open("Students", "SELECT * FROM [Dams] WHERE
           [DamID] = " & CurrentDam.Value & "'", myDataTable)
28.
29.         Dim PicID As String =
           myDataTable.Rows(0).Item("MainPic").ToString
30.
31.         Dim DState As String =
           myDataTable.Rows(0).Item("State").ToString
32.
33.         If PicID <> "" Then
34.
35.             Dim PicDB As New Data.DataTable
36.
37.             DbOps.Open("Students", "SELECT * FROM [DamPictures]
           WHERE [PicID] = '" & PicID & "'", PicDB)
38.
39.             Dim Pic As String =
           PicDB.Rows(0).Item("Filename").ToString
40.
41.             MainImage.Visible = True
42.
43.             MainImage.ImageUrl = "~/Images/" & Pic
44.
45.             MainImageDescription.Text =
           myDataTable.Rows(0).Item("DamName").ToString & " - " &
           PicDB.Rows(0).Item("Description").ToString
46.
47.         Else
48.
49.             MainImage.Visible = True
50.
51.             MainImage.ImageUrl = "~/Images/EmptyBig.jpg"
52.
53.             MainImageDescription.Text = ""
54.
55.
56.         End If
57.
58.
59.         If DState <> "" Then
60.
61.             Dim StateDB As New Data.DataTable
62.
63.             DbOps.Open("Students", "SELECT * FROM [Dams] WHERE
           [State] = '" & DState & "' AND [DamID] <> " & CurrentDam.Value & "'",
           StateDB)

```

```

64.
65.         Dim SCount As Integer = StateDB.Rows.Count
66.
67.         Dim I As Integer
68.
69.         For I = 1 To SCount
70.
71.             Dim Shp As New HyperLink
72.
73.             Shp.NavigateUrl = "~/MainSite/Dams.aspx?DamID="
74.             & StateDB.Rows(I - 1).Item("DamID").ToString
75.
76.             Shp.Text = StateDB.Rows(I -
77.             1).Item("DamName").ToString & " Dam"
78.
79.             pnlOthers.Controls.Add(Shp)
80.
81.             Dim lblShp As New Label
82.
83.             lblShp.Text = "<br />"
84.
85.             pnlOthers.Controls.Add(lblShp)
86.
87.         Next
88.
89.     End If
90.
91. End If
92.
93.
94.     Dim InstDef As New InstitutionManager.InstitutionDefiner
95.
96.     SlideImage_SlideShowExtender.SlideShowServicePath =
97.     InstDef.SlidesWebService
98.
99.     SlideImage_SlideShowExtender.SlideShowServiceMethod =
100.     "GetDam" & CurrentDam.Value & "Pics"
101.
102. End Sub
103.
104. End Class
105.

```


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