

**Report 1**

**Course ID**: CSE303

**Course Name**: Database Management

**Done by**: Group 2

Project Name: SREDA

|  |  |
| --- | --- |
| Name | ID |
| Khadija Rejjaoui | 1830131 |
| Mohammed Shahadat Hossain | 1731555 |
| Mohamad Azizul HAq Rabbi | 1610849 |
| Khondakar Morshed Afridi | 1820461 |
| Achhiya Sultana | 1821707 |

|  |  |
| --- | --- |
| Content Table | |
|  | |
| Introduction | 3-4 |
| Existing Business System with Rich Picture | 5 |
| Processes with six system elements (as is) | 6-9 |
| Process Diagram (as is) | 10-11 |
| Existing Problems & Analysis of the problem | 14 |
| Proposed Business System with Rich picture | 15 |
| Processes with six system elements (to be) | 16-18 |
| Process Diagram (to be) | 19-20 |
| Business Rules | 21 |
| ERD to Relation | 23-25 |
| Normalization | 25 |
| Data Dictionary | 26-33 |
| Physical System Design | 34-46 |
| Architecture of the software | 46 |
| Conclusion | 47-52 |

**Ch-1 Introduction:**

**1.a BACKGROUND OF THE ORGANIZATION**

**Sustainable and Renewable Energy Development Authority (SREDA)** is a [Bangladesh government](https://en.wikipedia.org/wiki/Bangladesh_government) agency under the [Ministry of Power, Energy and Mineral Resources](https://en.wikipedia.org/wiki/Ministry_of_Power,_Energy_and_Mineral_Resources), responsible for increasing renewable energy production in Bangladesh. It also acts as the regulatory agency for the sustainable energy industry**.**

In 2009, the Government of Bangladesh developed a [Renewable Energy Policy](https://en.wikipedia.org/w/index.php?title=Renewable_Energy_Policy&action=edit&redlink=1) which calls for renewable energy to be 10 percent of the total energy produced in Bangladesh. The government established the Sustainable and Renewable Energy Development Authority to support the Renewable Energy Policy through the Sustainable and Renewable Energy Development Authority Act in 2012. Bangladesh also joined the [International Energy Agency](https://en.wikipedia.org/wiki/International_Energy_Agency) after the agency was founded.

**1.b BACKGROUND OF THE PROJECT**

Searching and accumulation is a huge task. Due to staff limitation, lack of usage, production time and usage of different machineries for production, lack of experience and expertise of the new technology and awareness it is difficult to search, collect and update data from multiple sources for the organization. So we decide to build up a new project which may be the whole process a little bit easier.

**1.c OBJECTIVES OF THE PROJECT**

Objectives of the project are meaning steps towards business goals that are accomplished by the project. For examples: Cost- Reducing costs such as automation that reduces labor costs. Efficiency- Getting more output for a unit input (reducing the energy cost of a facility). Productivity- Getting more output for an hour of work (software applications that speed up work or improve its quality). Capabilities- Developing business capabilities (a telecom company launches a program to engage universities to hire new graduates. Knowledge- Developing or improving knowledge such as competitive intelligence. Knowledge is an objective but not an end goal (a feasibility for a new technology

**1.d SCOPE OF THE PROJECT**

The following steps can help to effectively define the scope of the project:

**1.d.a Identify the project needs:**

Initial discussions have been done with the development team regarding the issues. The chart can be dynamic up to certain level provided that the structure would be static but the values will come automatically from the database. However, detail analysis is required to find the feasibility of the feature.

**1.d.b Confirm the objectives and goals of the projects:**

Firstly one line chart can be incorporated in the report. Each line will be represent sector of each demand side. Details are attached in the report template.

**1.d.c Project scope description:**

IN SCOPE:

-an IVR system to handle

-Setup of the IVR system ready to handle all

-Training for the sales team on how to use the system

-An administration system so the IVR system can be configured

OUT OF SCOPE:

-Support for any other team

-The ability to route complex sales enquires

**1.d.d Expectations and acceptance:**

My team and I worked on a web application for the team one of our clients. Some of the issues included conflicts with the change management board, conflicts with the server support team and operational issues with the networking and hardware support team.

**1.d.e Identify constraints:**

Three types of constraints:

1.4.5.1 Time constraint: It refers to the project’s schedule for completion, including the deadlines for each phase of the project, as well as the date for rollout of the final deliverable.

1.4.5.2 Scope constraint: The scope of the project defines its specific goals, deliverables, features and functions, in additions to the tasks required to complete the project.

1.4.5.3 Cost constraint: The cost of the project, often doubled the project’s budget, comprises all of the financial resources needed to complete the project on time, in its predetermined scope.

**1.d.f Identify necessary changes:**

Scope management is one of the critical tasks of the project manager and the most difficult knowledge area in PMBOK to define and control. This difficulty is intrinsic to the projects because we cannot ignore the human side of such projects.

**Ch-2 Requirement Analysis**

1. ***Description of the Existing Business System (with rich picture):***

**Rich Picture Description (As is):**

*Data Sources*



*Strategically Decision making*

*Collect data*

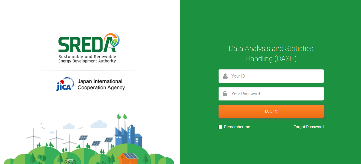
*SREDA User*



*Enter data*

*Build & update reporting Templates+*

*SREDA User*

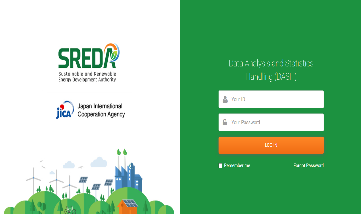


*MIS*

*MIS data migration*



SREDA User



*DASH*

*Business Analytics*



SREDA User



*Policy Makers*

*Store report*

*Analysis report*

*Review, Validate & Update Data*

*Generate reports*

The rich picture above, gives us an idea about the different processes in the existing system. There are five different processes:

* The first process is basic data entry, in which SREDA user will gather data from different sources and will enter those data manually to the system.
* The second process is update sub-project basic data, in which the data will migrated automatically from a system called MIS to Dash.
* The third process is called verify/validate data source, here the SREDA user needs to verify and validate the data entered in basic data entry process, and the data migrated from MIS.
* The fourth process named report handling and template sitting, in this process the SHARDA user needs to build and update the reporting templates.
* Last process is the generation of the report, here the SREDA user needs to provide required information to the system to generate the report. After the generation of the report, it can be shared with policy maker so they can use it in their decision making.

1. ***Processes along with six system elements:***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Process | System Roles | | | | | |
| Human | Non-Comp Hardware | Computing Hardware | Software | Database | Network & Communication |
| Basic data entry | 1. **SREDA user:** 2. Explore possible sources. 3. Contact those sources. 4. Collect and gather data from those sources. 5. Get connect to the system. 6. Find appropriate interface to insert the data. 7. Enter data to the dash. 8. Click on the save button to store the data. 9. **Amin** 10. Log in to dash. 11. Can create new user for the system. 12. Using sitting can do different changes in the system. | 1. **Books:** 2. Can be used as a data source to collect data. 3. **Pen and paper:** 4. SREDA user might write data, collected from a data source manually. 5. It is used to do some manual verification and calculation. 6. **Files:** 7. Can be used a data source. 8. It can store paper that has data. | 1. **PC/laptop:** 2. It helps to enter data into the system. 3. It helps to display data for the SHRDA user. | 1. **Operating Software:** 2. Windows: which provides a way to store files and run software… 3. Application Software: 4. Dash:  * Provide interface to SREDA user. * Which is used by SREDA user to enter data. * Which provide different interfaces to the admin to create user or to do different changes in the system.  1. **Other sources:**   Different systems that access by SHRDA user to collect data. | 1. **MS SQL server:** 2. Dash:   Which store and manage data entered by SREDA user.   1. **Others:** 2. Files:   Are manual database where we store paper that have data collected. | 1. **Internet connection:** 2. Needed to get connected to dash to enter data. 3. Needed to search for data through internet. 4. Needed for the admin to get connected to the dash to do changes and create new users. |
| update sub-project basic data | N/A | N/A | N/A | 1. Application Software: 2. MIS:   Which will transfer sub-project basic data to dash.   1. Dash: which will accept data migrated from MIS. | 1. MS SQL server: 2. MIS: which store data of sub-project.   Dash: which store and manage data migrated from MIS automatically | N/A |
| verify/ validate data source | 1. **SREDA user:** 2. Get connect to the dash. 3. Find appropriate interface in dash. 4. Start validating data entered by SREDA user and the data migrated from MIS. 5. If there are some mistakes, apply changes. 6. Click on save button. | 1. **Pen and paper:** 2. Used by SREDA user to make some manual calculations. | 1. **PC/laptop:** 2. It helps to display data for the SREDA user. 3. It helps SREDA user enter the correct data if there some mistakes. | 1. **Operating Software:** 2. Windows: which provides a way to run software… 3. **Application Software**: 4. Dash:  * Which provide interfaces to SHRDA user. * Which allow SHADA user to do some verification to the data. | 1. **MS SQL server:** 2. Dash: Which store and manage the data entered by SREDA user and data migrated from MIS. | 1. **Internet connection:** 2. Needed by SREDA user to connect to dash and MIS. 3. Needed by the SREDA user to verify and save updated data. |
| Report & Template  settings | 1. **SREDA Users:** 2. Get connect to the system. 3. Find appropriate interface to build and update reporting templates. 4. Build or update the reporting templates. 5. Click on the save button to save changes | N/A | 1. **PC/laptop:** 2. It helps to display the interface to the user. | 1. **Operating Software:** 2. Windows:which provides a way to run software… 3. **Application Software:** 4. *Dash****:***  * Which provide build and update interface to SREDA user * Which allow SHADA user build and apply changes to the reporting templates. | 1. **MS SQL server:** 2. Dash: Which store and manage updating of reporting templates. | 1. **Internet connection:** 2. Needed by SHRDA user to connect to dash. 3. Needed by the SHRDA user to build and update reporting templates. |
| generation of the report | 1. **SREDA user:** 2. Get connect to dash. 3. Find appropriate interface to generate report. 4. Provide required information. 5. Click on generate report button. 6. Click on the Store button. 7. Policy maker: 8. Get connected to the system. 9. Find appropriate interface. 10. Get access to reports. 11. Analyze the report 12. Strategically Decision   making | 1. **Report:** is the report printed by SHRDA user or policy maker from dash. | 1. **PC/laptop:** 2. It helps to display the interface to the user. 3. It helps to download the report. | 1. **Operating Software:** 2. Windows: which provides a way to store files and run software… 3. Application Software: 4. Dash:  * Which provide report generating interface to the user. * Which help the user to generate the report | 1. **MS SQL server:** 2. Dash:   Which store the report. | 1. **Internet connection:** 2. Needed by SHRDA user to connect to dash. 3. Needed by the SREDA to generate the report. |

1. **Process diagram (AS is):**











1. **Problem Analysis:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. Process Name | Stakeholders. | Concerns  (Issues/Problems) | Analysis  (Reason of the Problem) | Proposed Solution |
| Basic Data Entry | SREDA users. | All the data are not stored/saved at a specific time (Data are not available on time) and thus collecting the data from organizations to organizations is time consuming. | Collecting data on time is a huge responsibility and therefore a lot of staff and workhour is required. | This part of the system can be given to a different unit /sector. A specific unit /sector of workers, who work on only collecting data on time. |
| Verification and Validation of data | SREDA users. | 1. The current system seems to be outdated.  2. There is no sector /tab in the system where the data can be translated or converted if required.  3. Data collected from MIS can have errors in them. | 1. The system is not updated frequently. The database and the entire system seems to be running in an old infrastructure.  2. MIS data has also been collected by SHRDA users and manually entered into the system, so there is a chance of error occurring in that part. | 1. Update the system more frequently.  2. We can put some sort of  validation  conditions that will  identify the errors  that come with the data from  MIS. |
| Update Sub projects basic data | SREDA users. | 1. Data provided by the subproject owners are rarely comparable to the baseline data, and there is a need for conversion. With most of the cases, this conversion should be done manually, and there is a limited possibility to automate this process.  2. Difficult to check and verify energy and production related data. | 1. Due to the rapid change in system and technology it is not possible for the users to apply for loan with the correct information. Therefore a more base line data entry system is required.  2. Data collected from clients might have inconsistencies in them. | 1. Make the baseline input system simple and generate the required fields for the loan to be automated by the system.  2. Automatic validation formula can be set in the system to mark the data that does not match with the other data of the same/similar projects. |
| Report heading and Template setting | SREDA users. | The entire report template section seems to be done manually and thus new data/sections cannot be included in the report. | The formatting system is fixed. And therefore customization cannot be done. | The entire report and template section needs to be dynamic and automated, so that when the data is inputted /given the system can format itself accordingly. Adding many heading and template features. |
| Generating Report | SREDA Users and other stakeholders in the system, who are interested in getting a report of the data. | 1. There needs to be a section in the report where statistics/charts of data of the system is given.  2. Simple and Advanced analysis sections should be incorporated for better understanding. | 1. Additional graphs and charts  related to such statistics  might be useful for the  Stakeholders.  2. Energy usages in different types of industries / organizations are not same, neither comparable. Therefore, using only one stat. sheet can sometimes be misleading. | 1. Elaborated details of the graphs and charts needs to be attached in the report template.  2. Include more tabs/pages for the charts and graphs. |

**Description of the new system:**

The new system is more efficient and not time-consuming. Some changes have been applied to different processes of the old system to improve quality and reduce the cost and time. Those changes are:

Basic data entry: In order to get the benefit of the time that it gets wasted in collecting data from different places, a new interface has been provided to the unit/ sector which already has those data available.

Verification and Validation of data: To make sure of the correctness of the data, the new system does updates more frequently and there are some conditions and constraints in order to identify the errors that come from MIS.

Update Sub-projects basic data: The system has been designed to apply some automatic formulas to mark the data that does not match or make sense.

Report heading and Template setting: The new system has many headings and template features.

Generating Report: this process became easier as the user can add to delete many pages or graphs as he wants.

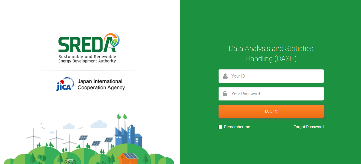
**Rich Picture (TO BE):**



*Policy Makers*

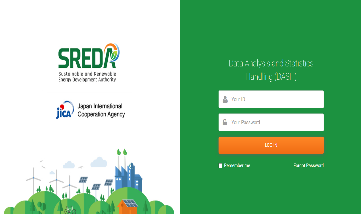
*Access to many headings and templates features.*

*SREDA User*



*MIS*

*MIS data migration*



*DASH*

SREDA User



*Data source people*



*Enter data and generate reports*

*Request data validation and verification*

*Business Analytics*



*Strategically Decision making*

*Analysis report*

*Store report*

*Generate reports*



SREDA User

*Apply different rules and constraints, and give feedback*

**Six Element analysis:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Process | System Roles | | | | | |
| Human | Non-Comp Hardware | Computing Hardware | Software | Database | Network & Communication |
| Basic data entry | 1. **Data source people:** 2. Get connect to the system. 3. Find appropriate interface to insert the data. 4. Enter data to the dash. 5. Click on the save button to store the data. 6. Click on generate report. 7. Click on print report. 8. **Amin** 9. Long in to the system 10. Can create new user for the system. 11. Using sitting can do different changes in the system. | 1. **Pen and paper:** 2. It might be used to do some manual verification and calculation. 3. **Files:** 4. Data source people might take data from different files.   b- It can store paper that has data. | 1. **PC/laptop:** 2. It helps to enter data into the system. 3. It used to store report. | 1. **Operating Software:** 2. Windows*:* which provides a way to store files and run software… 3. **Application Software:** 4. *Dash****:***  * Which is used by data source people to enter data. * Which provide different interfaces to the admin to create user or to do different changes in the system.  1. Other sources:   Different systems that access by data source people to collect data. | 1. **MS SQL server:** 2. Dash:   Which store and manage data entered by data source people.   1. **Other:** 2. Files :   Are manual database where we store paper that have data collected. | **1-Internet connection:**   1. Needed to get connected to dash to enter data. 2. Needed for the admin to get connected to the dash to do changes and create new users. |
| update sub-project basic data | N/A | N/A | N/A | 1. **Application Software:** 2. MIS:   Which will transfer sub-project basic data to dash.   1. Dash: which will accept data migrated from MIS. | 1. **MS SQL server:** 2. MIS: which store data of sub-project.   Dash: which store and manage data migrated from MIS automatically | N/A |
| verify/ validate data source | 1. **SREDA user:** 2. Get connect to the dash. 3. Find appropriate interface in dash. 4. Start validating data entered by data source people and the data migrated from MIS. 5. Click on unit conversion to unify the unit. 6. Click on validation condition to check the data migrated from MIS. 7. If there are some mistakes, apply changes 8. Click on save button. | 1. **Pen and paper:** 2. Used by SHRDA user to make some manual calculations. | 1. **PC/laptop:** 2. It helps to display data for the SHRDA user. 3. It helps SHRDA user enter the correct data if there some mistakes. | 1. **Operating Software:** 2. Windows:which provides a way to run software… 3. **Application Software:** 4. *Dash****:***  * Which provide interfaces to SHRDA user. * Which allow SHADA user to do some verification to the data. | 1. **MS SQL server:** 2. Dash:   Which store and manage the data entered by SHARDA user and data migrated from MIS. | 1. **Internet connection:** 2. Needed by SHRDA user to connect to dash and MIS. 3. Needed by the SHRDA user to verify and save updated data. |
| report handling and template sitting | 1. **SREDA user :** 2. Get connect to the system. 3. Find appropriate interface to build and update reporting templates. 4. Build or update the reporting templates. 5. Click on the save button to save changes | N/A | 1. **PC/laptop:** 2. It helps to display the interface to the user. | 1. **Operating Software:** 2. Windows:which provides a way to run software… 3. **Application Software:** 4. *Dash****:***  * Which provide build and update interface to SHRDA user * Which allow SHADA user build and apply changes to the reporting templates. | 1. **MS SQL server:** 2. Dash:   Which store and manage updating of reporting templates. | 1. **Internet connection:** 2. Needed by SHRDA user to connect to dash. 3. Needed by the SHRDA user to build and update reporting templates. |
| generation of the report | 1. **SREDA user :** 2. Get connect to dash. 3. Find appropriate interface to generate report. 4. Provide required information. 5. Click on generate report. 6. Store the report. 7. **Policy maker:** 8. Get connected to the system. 9. Find appropriate interface. 10. Get access to the reports. 11. Decision making based on the report. | 1. **Report:** is the report printed by SHRDA user or policy maker from dash. | 1. **PC/laptop:** 2. It helps to display the interface to the user. 3. It helps to download the report. | 1. **Operating Software:** 2. Windows*:* which provides a way to store files and run software… 3. **Application Software:** 4. *Dash****:***  * Which provide report generating interface to the user. * Which help the user to generate the report. | 1. **MS SQL server:** 2. Dash:   Which store the report. | 1. **Internet connection:** 2. Needed by SHRDA user to connect to dash. 3. Needed by the SHRDA to generate the report. |

**Process diagram (To be):**











**Ch-3 Logical System Design:**

1. Business Rules: The dash system store four types of data sources. Energy consumption per sector, GDP, Fuel, and Energy source. They all share some common attributes, yearly input, month, and financial year. Energy consumption per sector store Sector, unified\_Energy\_Unit, unified\_Energy\_value. Fuel attributes are sector, Fuel\_used, Energy\_value. Meanwhile, GDP attributes are value, source. The energy source table needs to store the following attributes Energy\_source\_ID, primary\_energy\_supply, Energy\_value, unified\_energy\_value, detail. Each project needs first to have an id and a name in addition to that, it should store some other basic information, and only the accepted project will be having project data entry. Project basic information attributes are application\_number, input\_data, L/C\_date, meeting\_date Prev.Fund\_Access, L/C\_date\_plan/Actual, Sub\_project\_amount, New/replacement, Installation\_date, Currency, Instant\_Date\_Plan/Actual, Line\_of\_Business, Loan\_amount. at the same time, the project also should have Existing, estimated, Actual energy, and equipment related data. For each of the energy-related data, we should have an id, Energy\_source, Energy consumption per hour, annual operation, annual production, and UOM. The project also stores information about the equipment used in each project and has a relationship with all the equipment table. This latter has two types of manufactured and supplies types of equipment. Dash can create a dynamic report which means that the user can insert and remove a part from the report easily because there is a table that has choices and select\_input.
2. **ERD**



**C-** **ERD to Relation:**

**Mapping the relations:**

DATASOURCE

|  |  |  |
| --- | --- | --- |
| Finical\_year | Month | Yearly Input |

GDP

|  |  |  |  |
| --- | --- | --- | --- |
| GDPFinical\_year | GDP\_Month | Value | source |

ENERGYSOURCE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ENFinical\_year | EN\_Month | Primary\_energy\_su | Primary\_value | Detail |

ENERGEYCONSUMPTIONSECTOR

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ENCFincial\_year | ENC\_Month | Sector | Unified\_energy\_unit | Unified\_energy\_value |

FUEL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| FFincial\_year | F\_Month | Sector | Fuel\_used | Energy\_value |

SUBPROJECTSOURCE

|  |  |  |
| --- | --- | --- |
| Finical\_year | Month | Subproject\_id |

SUBPROJECT

|  |  |
| --- | --- |
| Sub\_project\_id | name |

SUBPROJECTINFO

|  |  |
| --- | --- |
| Sub\_project\_id | Application\_no |

PROJECTINDO

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Application\_number | application\_date | Input\_date | L/C\_date | Meeting\_date | Prev.Fund\_Access | L/C\_date\_plan/Actual | Sub\_project\_amount | New/replacement | Installation\_date | Currency | Instant\_Date\_Plan/Actual | Line\_of\_Business | Loan\_amount |

EXSISTING\_ENERGY

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| EX\_ID | Energy\_source | Energy\_consumption\_per\_Hour | Annual\_operation\_hour | Annual\_production | UOM |

PROJECT\_EXISITING\_ENERGY

|  |  |
| --- | --- |
| Project\_ID | EX\_ID |

ESTIMATED\_ENERGY

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ES\_ID | Energy\_source | Energy\_consumption\_per\_Hour | Annual\_operation\_hour | Annual\_production | UOM |

PROJECT\_ESTIMATED\_ENERGY

|  |  |
| --- | --- |
| Project\_ID | ES\_ID |

ACTUAL\_ENERGY

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| AC\_ID | Energy\_source | Energy\_consumption\_per\_Hour | Annual\_operation\_hour | Annual\_production | UOM |

PROJECT\_ACTUAL\_ENERGY

|  |  |
| --- | --- |
| Project\_ID | AC\_ID |

EQUIPMENT

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| code | sl\_no | name | spesification | brand | model | supply | manufactuer | Qty | Quoted\_price | loan\_amount |

PROJECT\_EQUIPMENT

|  |  |
| --- | --- |
| Project\_ID | Equipement\_code |

AllEQUIPMENT

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| code | sl\_no | name | spesification | brand | model | supply | manufactuer | Qty | Quoted\_price | loan\_amount |

MANIFACTURER

|  |  |  |
| --- | --- | --- |
| CODE | Manfacturer\_name | Routing\_number |

SUPPLIES

|  |  |  |
| --- | --- | --- |
| CODE | Unit\_price | Supplier\_id |

REPORT\_GENERATION

|  |  |  |
| --- | --- | --- |
| Report\_ID | choice | Select\_input |

REPORTPROJECT

|  |  |
| --- | --- |
| Report\_ID | Subproject\_id |

PROJECTALLEQUIPEMENT

|  |  |
| --- | --- |
| code | Subproject\_id |

**Normalization:**

GDPID ---🡪 FinancialYear, YearlyInput, Value, Source

EnergySourceID -🡪 PrimaryEnergySupply, EnergyValue, UnifiedEnergyValue, Details

ReportID -🡪 Choice, selectInput, SubProjectID

EquipmentID- 🡪 Code, SlNo, Specification, brand, model, loanAmount, Qty, QuatedPrice

**Data Dictionary**

tblgdp:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cgdpid | VARCHAR | 10 | This is the primary key for the relation. This attribute will store the ID of GDP.E.g.”1210024300” |
| dfinancialyear | DATE | “yyyy/yy” | This will store the financial year of the gdp.E.g.”2010/11” |
| dyearlyinput | DATE | “dd-mmm-yyyy” | This will store the yearly input.E.g.”20-JAN-2010” |
| cvalue | VARCHAR | 12 | This will contain the GDP in Billions (BDT). For example:”942657.100000” |
| csource | TEXT | 40 | This will contain the name of the GDP source. E.g. ”Bangladesh Bureau of Statistics” |

tblenergysource:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cenergysourceid | VARCHAR | 12 | This is the primary key for the relation. This attribute will store the energy source Identity. E.g.”109200132301” |
| dfinancialyear | DATE | “yyyy/yy” | This will store the financial year of the energy source. E.g.”2011/12” |
| cprimaryenergysupply | VARCHAR | 20 | This will contain the energy supply. E.g. ”Coal” |
| cenergyunit | VARCHAR | 10 | This will contain the energy unit. E.g. ”Metric Ton” |
| cenergyvalue | VARCHAR | 10 | This will store the energy value. E.g. ”430,51700.00” |
| cunifiedenergyunit | VARCHAR | 20 | This will store the unified energy unit. E.g. ”kilo ton oil equivalent ” |
| cdetail | VARCHAR | 20 | This will contain the details of the energy source. E.g. “Fuel source” |

tblgdpenergy:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cgdpid | VARCHAR | 10 | This is a foreign key from the table GDP. This attribute will store the ID of GDP for GDPENERGY. E.g.”1210024300” |
| cenergysourceid | VARCHAR | 12 | This is a foreign key for the relation. This attribute will store the energy source Identity for GDPENERGY. E.g.”109200132301” |
| cgdp | VARCHAR | 12 | This will contain the GDP of the GDP energy. E.g. “Production” |

tblfuel:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cfuelid | VARCHAR | 10 | This is the primary key for the relation. This attribute will store the name of the fuel. E.g. ”Coal” |
| cfuelsector | VARCHAR | 20 | This will store the name of the fuel sector. E.g. ”Industry” |
| cfueltype | VARCHAR | 20 | This will contain the type of the fuel. E.g. ”Liquid” |
| cenergyvalue | VARCHAR | 10 | This will store the energy value. E.g. ”430,51700.00” |

tblenergyconsumptionsector:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| csector | VARCHAR | 20 | This is the primary key for the relation. This attribute will store the name of the sector. E.g. ”Garment” |
| cunifiedenergyunit | VARCHAR | 20 | This will store the unified energy unit. E.g. ”kilo ton oil equivalent ” |
| cenergyvalue | VARCHAR | 20 | This will store the unified energy unit. E.g. ”12,234,100,450,00.00” |

tblproductunit:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cfuelid | VARCHAR | 10 | This is a foreign key from the table FUEL. This attribute will store the fuelid. E.g.”1210024300” |
| csector | VARCHAR | 20 | This is a foreign key from the table ENERGYCONSUMPTIONSECTOR. This attribute will store the sector. E.g. ”Power sector” |
| cenergysourceid | VARCHAR | 20 | This is a foreign key from the table ENERGY SOURCE.This attribute will store the energy source Identity. E.g.”109200132301” |
| cfinancialyear | DATE | “yyyy/yy” | This will store the financial year of the energy source. E.g.”2011/12” |
| cmonth | DATE | “dd-mmm-yyyy | This will store the yearly input.E.g.”20-APR-2010” |
| dyearlyinput | DATE | “dd-mmm-yyyy” | This will store the yearly input.E.g.”20-JAN-2010” |
| cenergyunit | VARCHAR | 10 | This will contain the energy unit. E.g. ”MT” |

tblreportgeneration:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| creportid | VARCHAR | 12 | This is the primary key for the relation.This attribute will store the report identity. E.g.”109200132301” |
| cchoice | VARCHAR | 20 | This will contain the choice. E.g. ”Cement” |
| cselectinput | VARCHAR | 20 | This will store the select input. E.g. ”Product unit” |

tblprojectdataentry:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cprojectid | VARCHAR | 12 | This is the primary key for the relation. This attribute will store the project Identity. E.g.”40032301” |
| cprojectname | VARCHAR | 20 | This will store the name of the project. E.g. ”Data entry” |
| csector | VARCHAR | 20 | This will store the sector of the project. E.g. ”Cement” |
| camount | VARCHAR | 20 | This will contain the amount.E.g.”100,395,360.00” |
| cstatus | VARCHAR | 10 | This will store the status of the project. E.g. ”Rank-2” |
| capplicationnumber | VARCHAR | 20 | This is a foreign key for PROJECTINFORMATION table. This attribute will store application number of the project. E.g.”AD20032301 |

tblexistingenergy:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cexid | VARCHAR | 10 | This is the primary key for the relation. This attribute will store the existing energy Identity. E.g.”9200132301” |
| cenergysource | VARCHAR | 20 | This will contain the energy source. E.g. ”Electricity” |
| cenergyconsuptionperhour | VARCHAR | 10 | This will contain the energy consumption per hour. E.g. ”323.83” |
| cannualoperationhour | VARCHAR | 8 | This will store the annual operation hour. E.g. ”249600.00” |
| cannualproduction | VARCHAR | 10 | This will store the annual production. E.g. ”9600000.00” |
| cuom | VARCHAR | 10 | This will contain the UOM. E.g. ”Pcs” |

tblprojectexistingenergy:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cprojectid | VARCHAR | 12 | This is a foreign key from the PROJECTDATAENTRY table. This attribute will store the project Identity. E.g.”40032301” |
| cexid | VARCHAR | 10 | This is a foreign key from the EXISTINGENERGY table. This attribute will store the existing energy Identity. E.g.”9200132301” |

tblestimatedenergy:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cesid | VARCHAR | 10 | This is the primary key for the relation. This attribute will store the estimated energy Identity. E.g.” 7200132301” |
| cenergysource | VARCHAR | 20 | This will contain the energy source. E.g. ”Electricity” |
| cenergyconsuptionperhour | VARCHAR | 10 | This will contain the energy consumption per hour. E.g. ”323.83” |
| cannualoperationhour | VARCHAR | 8 | This will store the annual operation hour. E.g. ”249600.00” |
| cannualproduction | VARCHAR | 10 | This will store the annual production. E.g. ”9600000.00” |
| cuom | VARCHAR | 10 | This will contain the UOM. E.g. ”Pcs” |

tblprojectestimatedenergy:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cprojectid | VARCHAR | 12 | This is a foreign key from the PROJECTDATAENTRY table. This attribute will store the project Identity. E.g.” 40032301” |
| cesid | VARCHAR | 10 | This is a foreign key from the ESTIMATEDENERGY table. This attribute will store the estimated energy Identity. E.g.”7200132301” |

tblactualenergy:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cacid | VARCHAR | 10 | This is the primary key for the relation. This attribute will store the actual energy Identity. E.g.” 1200132301” |
| cenergysource | VARCHAR | 20 | This will contain the energy source. E.g. ”Electricity” |
| cenergyconsuptionperhour | VARCHAR | 10 | This will contain the energy consumption per hour. E.g. ”323.83” |
| cannualoperationhour | VARCHAR | 8 | This will store the annual operation hour. E.g. ”249600.00” |
| cannualproduction | VARCHAR | 10 | This will store the annual production. E.g. ”9600000.00” |
| cuom | VARCHAR | 10 | This will contain the UOM. E.g. ”Pcs” |

tblprojectactualenergy:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cprojectid | VARCHAR | 12 | This is a foreign key from the PROJECTDATAENTRY table. This attribute will store the project Identity. E.g.” 40032301” |
| cacid | VARCHAR | 10 | This is a foreign key from the ACTUALENERGY table. This attribute will store the estimated energy Identity. E.g.”1200132301” |

tblequipment:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| ccode | VARCHAR | 10 | This is the primary key for the relation. This attribute will store the code of the equipment. E.g. ”3.3” |
| csino | VARCHAR | 5 | This will contain the sino of the equipment. E.g. ”2” |
| cname | VARCHAR |  | This attribute will store the name of the equipment. E.g. ”Winder” |
| cspecification | TEXT | 20 | This will store the specification of the equipment. E.g. ”Sewing machine directly connected motor” |
| cbrand | VARCHAR | 12 | This attribute will store the brand name of the equipment. E.g. ”Juki” |
| cmodel | VARCHAR | 20 | This will contain the model of the equipment. E.g. ”DDL900BBNHB” |
| csupply | TEXT | 20 | This will contain the supplier of the equipment. E.g. ”Juki Singapore Pte.Ltd” |
| cmanufacture | VARCHAR | 20 | This will contain the manufacturer. E.g. ”Juki” |
| cqty | VARCHAR | 10 | This will contain the qty. E.g. ”2500” |
| cquotedprice | VARCHAR | 12 | This will contain the quoted price of the equipment. E.g.  ”201875000.00” |
| cloanamout | VARCHAR | 20 | This will store the loan amount of the equipment. E.g. ”1,203,0405897” |

tblprojectequipment:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Size/Format | Remarks |
| cprojectid | VARCHAR | 10 | This is the primary key for the relation. This attribute will store the ID of PROJECT.E.g.”1210024300” |
| cequipmentcode | VARCHAR | 12 | This will contain the equipment code. For example:”942657309456” |

tblprojectbasicinformation:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | | Name | Type | Size/Format | Remarks | | capplicationnumber | VARCHAR | 20 | This is the primary key for the relation as well as foreign key for PROJECTDATAENTRY table. This attribute will store application number of the project. E.g.”AD20032301” | | dapplicationdate | DATE | “dd-mmm-yyyy” | This will store the application date.E.g.”20-FEB-2010” | | dinputdate | DATE | “dd-mmm-yyyy” | This will contain the input date of the project.E.g.”06-MAR-2010” | | dlcdate | DATE | “dd-mmm-yyyy” | This will store a letter of credit date.E.g.”20-FEB-2010” | | dmeetingdate | DATE | “dd-mmm-yyyy” | This will contain the meeting date of the project.E.g.”06-APR-2010” | | cprevfundaccess | VARCHAR | 7 | This will contain the previous fund access information of the project.E.g.”No” | | clcdateplanactual | VARCHAR | 10 | This will store the actual plan of the project.E.g.”Plan” | | csubprojectamount | VARCHAR | 15 | This will contain the amount of sub project.E.g.”4,720,000,000.00” | | cnewreplacement | TEXT | 20 | This will store the replacement of the project. E.g. ”Brand new facility” | | dinstallationdate | DATE | “dd-mmm-yyyy” | This will store the installation date.E.g.”20-FEB-2010” | | ccurrency | VARCHAR | 10 | This will contain the currency.E.g.”BDT” | | dinstantdateplanactual | VARCHAR | 10 | This will contain the actual plan.E.g.”Plan” | | clineofbusiness | TEXT | 20 | This will store the line of business.E.g.”Consumer loan” | | cloanamount | VARCHAR | 20 | This will contain the amount of the loan.E.g.”1,500,395,360.00” | |

**Chapter 4:**

Input, purpose and query:

Data:

| **ID** | **SubSector** | **Code** | **Type** | **Equipment** | **Qty** | **Price** | **Unit Price** | **Project Price** | **Name** | **IFI** | **Status** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AF17103001 | Spinning | 3.1 (1) | Spinning | Roving Frame | 5 | 86.4 | 17.28 | 517.3 | Pahartali | BIFFL | Subproject |
| 3.1 (3) | Spinning | Winder | 14 | 176.6 | 12.61429 |
| 3.1 (4) | Spinning | Air jet Spinning | 6 | 211.4 | 35.23333 |
| 9.8.1 (2) | Air Conditioner | Absorption Chiller | 2 | 29.2 | 14.6 |
| 9.10.1 | LED | LED | 3020 | 2.8 | 0.000927 |
| 9.12.2 | Waste Heat Recovery | Exhaust gas boiler | 1 | 10.9 | 10.9 |
| AD18081601 | Garments | 3.3 | Sewing Machine | Sewing Machine | 1464 | 169.1 | 0.115505 | 169.1 | Fakir | BIFFL | NOC |
| AF18080901 | Spinning | 3.1 (3) | Spinning | Winder | 8 | 116.5 | 14.5625 | 116.5 | Bandhab | BIFFL | Pipeline |
| AD18070101 | Spinning | 9.10.1 | LED | LED | 5000 | 1.3 | 0.00026 | 85.5 | Etafil | BIFFL | Subproject |
| 9.11.1 | Gas Engine Cogeneration | Generator | 2 | 56.7 | 28.35 |
| 9.8.1 (2) | Air Conditioner | Absorption Chiller |  | 27.5 |  |
| AD18062501 | Garments | 3.3 | Sewing Machine | Sewing Machine | 658 | 85.9 | 0.130547 | 109 | Toshrifa | BIFFL | Subproject |
| 9.6.2 | Boiler | Boiler | 4 | 16.3 | 4.075 |
| 2CZ00 | BEMS | BEMS | 1 | 6.8 | 6.8 |
| AF17083101 | Spinning | 3.1 (1) | Spinning | Roving Frame | 4 | 41.4 | 10.35 | 253.9 | Aman | BIFFL | NOC |
| 3.1 (2) | Spinning | Ring spinnig | 9 | 123.6 | 13.73333 |
| 3.1 (3) | Spinning | Winder | 4 | 58.5 | 14.625 |
| 9.8.1 (2) | Air Conditioner | Absorption Chiller | 1 | 30.4 | 30.4 |
| AD17050301 | Cement | 5.1 | VRM | VRM | 1 | 734 | 734 | 734 | Sung Shing Cement | BIFFL | NOC |
| AF17041901 | Electronic | 9.4.2 (2) | Air Compressor | Air Compressor | 1 | 10.5 | 10.5 | 10.5 | Fair Eletronics | BIFFL | Subproject |
| AD17041201 | Cement | 5.1 | VRM | VRM | 1 | 1270 | 1270 | 1270 | Meghna | IDCOL | Pipeline |
| AF15100301 | Garments | 3.3 | Sewing Machine | Sewing Machine | 3045 | 559.1 | 0.183612 | 753.5 | Odyssey Craft | IDCOL | Pipeline |
| 9.4.1 (1) | Air Compressor | Air Compressor | 4 | 38.4 | 9.6 |
| 9.8.1 | Air Conditioner | Air Conditioner | 6 | 150 | 25 |
| 9.10.1 | LED | LED | 7500 | 6 | 0.0008 |
| AD19040401 | Garments | 3.3 | Sewing Machine | Sewing Machine | 4295 | 791.6 | 0.184307 | 805.4 | Pacific Blue | IDCOL | Pipeline |
| 9.4.1 (1) | Air Compressor | Air Compressor | 1 | 8.9 | 8.9 |
| 9.6.2 | Boiler | Boiler | 1 | 4.9 | 4.9 |
| AF17120401 | Spinning | 3.1 (1) | Spinning | Roving Frame | 8 | 113 | 14.125 | 983 | Roshowa | IDCOL | NOC |
| 3.1 (2) | Spinning | Ring spinnig | 32 | 531 | 16.59375 |
| 3.1 (3) | Spinning | Winder | 32 | 339 | 10.59375 |
| AD19020301 | Paper | 2.2 | De-inking Plant | De-inking Plant | 1 | 223.7 | 223.7 | 223.7 | Modhumoti | IDCOL | Pipeline |
| AD19020302 | Garments | 3.3 | Sewing Machine | Sewing Machine | 757 | 353.5 | 0.466975 | 413.2 | Vertex | IDCOL | NOC |
| 9.4.2 (2) | Air Compressor | Air Compressor | 4 | 9.6 | 2.4 |
| 9.6.2 | Boiler | Boiler | 6 | 50.1 | 8.35 |
| AF19091501 | Cement | 5.1 | VRM | VRM | 1 | 1000 | 1000 | 1000 | Confidence | IDCOL | Pipeline |
| AD19073101 | Garments | 3.3 | Sewing Machine | Sewing Machine | 7524 | 938.892346 | 0.124786 | 1000.186683 | Snowtex | IDCOL | Pipeline |
| 9.4.2 | Air Compressor | Air Compressor | 3 | 3.42252645 | 1.140842 |
| 9.6.2 | Boiler | Boiler | 2 | 11.6365899 | 5.818295 |
| 9.8.1 | Air Conditioner | Air Conditioner | 5 | 4.04480398 | 0.808961 |
| 9.10.1 | LED | LED | 25000 | 17.8593653 | 0.000714 |
| 2BZ00 | Lift | Lift | 5 | 24.3310516 | 4.86621 |
| AF19052101 | Spinning | 3.1 (3) | Spinning | Winder | 35 | 368.4 | 10.52571 | 368.4 | Asia Composite | IDCOL | Pipeline |
| AF19031901 | Spinning | 3.1 (3) | Spinning | Winder | 10 | 190.2 | 19.02 | 190.2 | GreenTex | IDCOL | NOC |
| AD18081401 | Garments | 3.3 | Sewing Machine | Sewing Machine | 224 | 11.1 | 0.049554 | 11.1 | Giant | IDCOL | Pipeline |
| AD19092201 | Spinning | 3.1 (1) | Spinning | Roving Frame | 11 | 123.118354 | 11.19258 | 1058.864549 | Hamid | IDCOL | NOC |
| 3.1 (2) | Spinning | Ring spinnig | 30 | 510.63389 | 17.02113 |
| 3.1 (3) | Spinning | Winder | 30 | 203.35589 | 6.77853 |
| 3.5 | Heat Exchanger | Heat Exchanger | 2 | 20.0939097 | 10.04695 |
| 9.6.2 | Boiler | Boiler | 3 | 11.4625052 | 3.820835 |
| 9.8.1 (2) | Air Conditioner | Absorption Chiller | 5 | 190.2 | 38.04 |

Graph 1: Intensity

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data Table** |  |  |  |  |
| **Input table** |  |  |  |  |
|  | 2013/14 | 2014/15 | 2015/16 | 2016/17 |
| Oil | 6,088 | 5,907 | 5,834 | 6,536 |
| Oil excluding transport | 3,360 | 3,162 | 2,930 | 3,164 |
| Gas | 21,927 | 23,228 | 25,600 | 26,141 |
| Gas excluding transport | 20,865 | 22,092 | 24,369 | 24,898 |
| Coal | 526 | 510 | 559 | 605 |
| Power from Hydro & Import | 245 | 339 | 411 | 485 |
| Total Primary Energy Supply | 28,787 | 29,984 | 32,404 | 33,768 |
| TPES excluding transport | 24,997 | 26,103 | 28,270 | 29,151 |
| Real GDP in billion Tk | 7,741 | 8,249 | 8,835 | 9,479 |
| Energy Intensity (TPES/GDP) ktoe | 3.72 | 3.63 | 3.67 | 3.56 |
| Energy Intensity excluding transport | 3.23 | 3.16 | 3.20 | 3.08 |
| Trend | 1.00 (base) | 1 | 1 | 1 |
| Teand excluding transport | 1.00(base) | 1 | 1 | 1 |

**Graph 3: Consumption**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Data Table** |  |  | |  |  |  |  |  |  |
| **Input table** |  |  | |  |  |  |  |  |  |
| FY | Coal |  | | Imported Coal |  |  |  |  |  |
| Industry |  | | Industry |  |  |  |  |  |
| Mt |  | | Mt |  |  |  |  |  |
| 2012/13 | 288,266 |  | |  |  |  |  |  |  |
| 2013/14 | 338,618 |  | |  |  |  |  |  |  |
| 2014/15 | 313,405 |  | |  |  |  |  |  |  |
| 2015/16 | 430,517 |  | |  |  |  |  |  |  |
| 2016/17 | 451,512 |  | |  |  |  |  |  |  |
| 1Mt | 0.00061 |  | | ktoe |  |  |  |  |  |
| FY | Oil |  | | Oil | Oil | Oil | Oil | Sector wise data are not available for FY2013 to 2016. It was calculated based on the sector percentage of FY2017. =>Sector wise data bacome available. | |
| Industry |  | | Transport | Residence | Building | Agriculture |
| Mt |  | | Mt | Mt | Mt | Mt |
| 2012/13 | 240,649 |  | | 2,122,949 | 157,679 | 16,359 | 782,244 | 5,086,469 |  |
| 2013/14 | 278,606 |  | | 2,457,790 | 170,032 | 17,640 | 843,528 | 5,484,966 |  |
| 2014/15 | 299,114 |  | | 2,472,486 | 147,238 | 17,114 | 818,377 | 5,321,423 |  |
| 2015/16 | 331,003 |  | | 2,616,347 | 162,935 | 16,904 | 808,319 | 5,256,020 |  |
| 2016/17 | 370,848 |  | | 3,038,511 | 182,549 | 18,939 | 905,623 | 5,888,730 |  |
| 1Mt | 0.00111 |  | | ktoe |  |  |  |  |  |
| FY | Gas |  | | Gas | Gas | Gas | Gas | Gas | Gas |
|  | | Industry | | | Transport | Residence | Building | Agriculture |
| Industry |  | | Fertilizer | Captive | CNG | Domestic | Commercial | Tea Estate |
| MMCM |  | | MMCM | MMCM | MMCM | MMCM | MMCM | MMCM |
| 2012/13 | 3,411 |  | | 1,189 | 3,429 | 1,137 | 2,541 | 213 | 22 |
| 2013/14 | 4,018 |  | | 1,523 | 4,071 | 1,136 | 2,875 | 252 | 23 |
| 2014/15 | 4,183 |  | | 1,524 | 4,249 | 1,215 | 3,346 | 257 | 23 |
| 2015/16 | 4,417 |  | | 1,490 | 4,554 | 1,316 | 4,260 | 254 | 26 |
| 2016/17 | 4,619 |  | | 1,391 | 4,545 | 1,330 | 4,373 | 245 | 28 |
| 1MMCM | 0.935 |  | | ktoe |  |  |  |  |  |
| FY | Power |  | | Power | Power | Power | Power |  |  |
| Industry |  | | Residence | Building | | Agriculture |  |  |
| Industrial |  | | Domestic | Commercial | Others | Agriculture |  |  |
| GWh |  | | GWh | GWh | GWh | GWh |  |  |
| 2012/13 | 0 |  | | 0 | 0 | 0 | 0 |  |  |
| 2013/14 | 12,268 |  | | 18,453 | 3,312 | 46 | 173 | 36,233 |  |
| 2014/15 | 13,306 |  | | 20,470 | 3,685 | 523 | 1,636 | 39,624 |  |
| 2015/16 | 15,505 |  | | 23,017 | 4,224 | 850 | 1,633 | 45,229 |  |
| 2016/17 | 17,819 |  | | 25,223 | 4,660 | 1,005 | 1,553 | 50,265 |  |
| 1GWh | 0.283 |  | | ktoe |  |  |  |  |  |

**Queries:**

/\* Database name \*/

Use kyoto;

/\* Iintensity table\*/

CREATE TABLE Intensity (yearFrom Integer, yearTo Integer,

oilAmount Integer, oilAmountET Integer,

gasAmount Integer, gasAmountET Integer,

coalAmount Integer,

hydroAndImportAmount Integer,

TPES Integer,

TPESET Integer,

GDP Integer,

EnergyIntensity float,

EnergyIntensityET float,

Trend float );

DROP TABLE Intensity;

SELECT \* FROM Intensity;

INSERT INTO IntensityVALUES ( 2013, 2014, 6088, 3360, 21927, 20865,526,245,28787,24997,7741,3.72, 3.23,1.00),

( 2014, 2015, 5907, 3162, 23228, 22092,510,339,29984,26103,8249,3.63, 3.16,1.00),

( 2015, 2016, 5834, 2930, 25600, 24369,559,441,32404,28270,8835,3.67, 3.20,1.00),

( 2016, 2017, 6536, 3164, 26141, 24141,605,485,33768,29151,9479,3.56, 3.08,1.00);

/\* Basic Data Table\*/

CREATE TABLE Data (

ID varchar(10),

SubSector char(25),

Code VARCHAR(25),

Type char(25),

Equipment char(25),

Qty int,

Price float(25),

UnitPrice float(25),

ProjectPrice float(25),

Name char(25),

IFI char(25),

Status char(25)

);

DROP TABLE Data;

select \* from Data;

INSERT INTO Data (ID, SubSector, Code, Type, Equipment, Qty, Price, UnitPrice, ProjectPrice, Name, IFI, Status) VALUES

("AF17103001", "Spinning", "3.1.1", "Spinning", "Roving Frame", 5, 86.4, 17.28, 517.3, "Pahartali", "BIFFL", "Subproject"),

("AF17103001", "Spinning", "3.1.3", "Spinning", "Winder", 14, 176.6, 12.61429, 517.3, "Pahartali", "BIFFL", "Subproject"),

("AF17103001", "Spinning", "3.1.4", "Spinning", "Air jet Spinning", 6, 211.4, 35.23333, 517.3, "Pahartali", "BIFFL", "Subproject"),

("AF17103001", "Spinning", "9.8.1(2)", "Air Conditioner", "Absorption Chiller", 2, 29.2, 14.6, 517.3, "Pahartali", "BIFFL", "Subproject"),

("AF17103001", "Spinning", "9.10.1", "LED", "LED", 3020, 2.8, 0.000927, 517.3, "Pahartali", "BIFFL", "Subproject"),

("AF17103001", "Spinning", "9.12.2", "Waste Heat Recovery", "Exhaust gas boiler", 1, 10.9, 10.9, 517.3, "Pahartali", "BIFFL", "Subproject"),

("AD18081601", "Garments", "3.3", "Sewing Machine", "Sewing Machine", 1464, 169.1, 0.115505, 169.1, "Fakir", "BIFFL", "NOC"),

("AF18080901", "Spinning", "3.1(3)", "Spinning", "Winder", 8, 116.5, 14.5625, 116.5, "Bandhab", "BIFFL", "Pipeline"),

("AD18070101", "Spinning", "9.10.1", "LED", "LED", 5000, 1.3, 0.00026, 85.5, "Etafil", "BIFFL", "Subproject"),

("AD18070101", "Spinning", "9.11.1", "Gas Engine Cogeneration", "Generator", 2, 56.7, 12,28.35, "Etafil", "BIFFL", "Subproject"),

("AD18070101", "Spinning", "9.8.1(2)", "Air Conditioner", "Absorption Chiller", 2, 56.7, 12,28.35, "Etafil", "BIFFL", "Subproject"),

("AF17083101", "Spinning", "3.1(1)", "Spinning", "Roving Frame", 4, 41.4, 10.35, 253.9, "Aman", "BIFFL", "NOC"),

("AF17083101", "Spinning", "3.1(2)", "Spinning", "Ring spinnig", 9, 123.6, 11, 13.73333, "Aman", "BIFFL", "NOC"),

("AF17083101", "Spinning", "3.1 (3)", "Spinning", "Winder", 4, 58.5, 14.625, 12, "Aman", "BIFFL", "NOC"),

("AF17083101", "Spinning", "9.8.1 (2)", "Air Conditioner", "Absorption Chiller",3, 1, 30.4, 30.4, "Aman", "BIFFL", "NOC"),

("AD17050301", "Cement", "5.1", "VRM", "VRM", 1, 734, 734, 734, "Sung Shing Cement", "BIFFL", "NOC"),

("AF17041901", "Electronic"," 9.4.2(2)", "Air Compressor", "Air Compressor", 1, 10.5, 10.5, 10.5, "Fair Eletronics", "BIFFL", "Subproject"),

("AD17041201", "Cement"," 5.1", "VRM", "VRM", 1, 1270, 1270, 1270, "Meghna", "IDCOL", "Pipeline"),

("AF15100301", "Garments"," 3.3", "Sewing Machine", "Sewing Machine", 3045, 559.1, 0.183612, 753.5, "Odyssey Craft", "IDCOL", "Pipeline"),

("AF15100301", "Garments", "9.4.1(1)", "Air Compressor", "Air Compressor", 4, 38.4, 9.6, 753.5, "Odyssey Craft", "IDCOL", "Pipeline"),

("AF15100301", "Garments"," 9.8.1", "Air Conditioner", "Air Conditioner", 6, 150, 25, 753.5, "Odyssey Craft", "IDCOL", "Pipeline"),

("AF15100301", "Garments", "9.10.1", "LED", "LED", 7500, 6, 0.0008, 753.5, "Odyssey Craft", "IDCOL", "Pipeline"),

("AD19040401", "Garments"," 3.3", "Sewing Machine", "Sewing Machine", 4295, 791.6, 0.184307, 805.4, "Pacific Blue", "IDCOL", "Pipeline"),

("AD19040401", "Garments"," 9.4.1(1)", "Air Compressor", "Air Compressor", 1, 8.9, 8.9, 805.4, "Pacific Blue", "IDCOL", "Pipeline"),

("AD19040401", "Garments", "9.6.2", "Boiler", "Boiler", 1, 4.9, 4.9, 805.4, "Pacific Blue", "IDCOL", "Pipeline"),

("AF17120401", "Spinning", "3.1(1)", "Spinning", "Roving Frame", 8, 113, 14.125, 983, "Roshowa", "IDCOL", "NOC"),

("AF17120401", "Spinning"," 3.1(2)", "Spinning", "Ring spinnig", 32, 531, 16.59375, 983, "Roshowa", "IDCOL", "NOC"),

("AF17120401", "Spinning", "3.1(3)", "Spinning", "Winder", 32, 339, 10.59375, 983, "Roshowa", "IDCOL", "NOC"),

("AD19020302", "Garments", "3.3", "Sewing Machine", "Sewing Machine", 757, 353.5, 0.466975, 413.2, "Vertex", "IDCOL", "NOC"),

("AD19020302", "Garments", "9.6.2", "Boiler", "Boiler", 6, 50.1, 8.35, 413.2, "Vertex", "IDCOL", "NOC"),

("AF19091501", "Cement"," 5.1", "VRM", "VRM", 1, 1000, 1000, 1000, "Confidence", "IDCOL", "Pipeline"),

("AD19073101", "Garments", "3.3", "Sewing Machine", "Sewing Machine", 7524, 938.892346, 0.124786, 1000.186683, "Snowtex", "IDCOL", "Pipeline"),

("AD19073101", "Garments", "9.4.2", "Air Compressor", "Air Compressor", 3, 3.42252645, 1.140842, 1000.186683, "Snowtex", "IDCOL", "Pipeline"),

("AD19073101", "Garments", "9.6.2", "Boiler", "Boiler", 2, 11.6365899, 5.818295, 1000.186683, "Snowtex", "IDCOL", "Pipeline"),

("AD19073101", "Garments", "9.8.1", "Air Conditioner", "Air Conditioner", 5, 4.04480398, 0.808961, 1000.186683, "Snowtex", "IDCOL", "Pipeline"),

("AD19073101", "Garments", "9.10.1", "LED", "LED", 25000, 17.8593653, 0.000714, 1000.186683, "Snowtex", "IDCOL", "Pipeline"),

("AD19073101", "Garments", "2.00.0", "Lift", "Lift", 5, 24.3310516, 4.86621, 1000.186683, "Snowtex", "IDCOL", "Pipeline"),

("AF19052101", "Spinning", "3.1(3)", "Spinning", "Winder", 35, 368.4, 10.52571, 368.4, "Asia Composite", "IDCOL", "Pipeline"),

("AF19031901", "Spinning", "3.1 (3)", "Spinning", "Winder", 10, 190.2, 19.02, 190.2, "GreenTex", "IDCOL", "NOC"),

("AD18081401", "Garments", "3.3", "Sewing Machine", "Sewing Machine", 224, 11.1, 0.049554, 11.1, "Giant", "IDCOL", "Pipeline"),

("AD19092201", "Spinning", "3.1(1)", "Spinning", "Roving Frame", 11, 123.118354, 11.19258, 1058.864549, "Hamid", "IDCOL", "NOC"),

("AD19092201", "Spinning", "3.1(2)", "Spinning", "Ring spinnig", 30, 510.63389, 17.02113, 1058.864549, "Hamid", "IDCOL", "NOC"),

("AD19092201", "Spinning", "3.1(3)", "Spinning", "Winder", 30, 203.35589, 6.77853, 1058.864549, "Hamid", "IDCOL", "NOC"),

("AD19092201", "Spinning", "3.5", "Heat Exchanger", "Heat Exchanger", 2, 20.0939097, 10.04695, 1058.864549, "Hamid", "IDCOL", "NOC"),

("AD19092201", "Spinning", "9.6.2", "Boiler", "Boiler", 3, 11.4625052, 3.820835, 1058.864549, "Hamid", "IDCOL", "NOC"),

("AD19092201", "Spinning", "9.8.1(2)", "Air Conditioner", "Absorption Chiller", 5, 190.2, 38.04, 1058.864549, "Hamid", "IDCOL", "NOC");

/\* Equipment table from basic data entry \*/

CREATE TABLE EquipmentList(

Equipment char(20),

Amount float

);

select distinct Equipment from Data;

DROP TABLE EquipmentList;

SELECT \* FROM EquipmentList;

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Absorption Chiller";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Air Compressor";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Air Conditioner";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Air jet Spinning";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Boiler";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "De-inking Plant";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Exhaust gas boiler";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Generator";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Heat Exchanger";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "LED";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Ring spinnig";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Roving Frame";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Sewing Machine";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "VRM";

INSERT INTO EquipmentList (Equipment, Amount) SELECT Equipment, SUM(Price) as Amount from Data Where Equipment = "Winder";

/\* EnSource \*/

CREATE TABLE EnSOURCE ( yearFrom INTEGER,

yearTo INTEGER,

coal INTEGER ,

oil INTEGER ,

gas INTEGER ,

hydro INTEGER,

import INTEGER);

SELECT \* FROM EnSOURCE;

DROP TABLE EnSOURCE;

INSERT INTO EnSOURCE VALUES ( 2012, 2013, 932244, 5086469, 22601, 894 ,0),(2014, 2015 ,835534, 5321423 ,24843 ,566, 3380),

(2015, 2016 ,916086, 5256020, 27381 ,962 ,3822), (2016 ,2017 ,992089 ,5888730 ,27957 ,982 ,4656),

(2017 ,2018 ,0 ,6400000 ,0 ,0 ,0), (2013 ,2014 ,862761 ,5484966 ,23450 ,586, 0);

/\* Energy Consumption \*/

CREATE TABLE oilconsumption(yearFrom int ,

yearTo int ,

oilIndustry int ,

oilTransport int ,

oilResidence int ,

oilBuilding int ,

oilAgriculture int);

SELECT \* FROM oilConsumption;

DROP TABLE oilConsumption;

INSERT INTO oilConsumption VALUES (2012, 2013, 267, 2356, 175, 18, 87),(2013, 2014, 309, 2728, 189, 20, 936),

(2014, 2015 ,332, 2744, 163, 19, 908),(2015, 2016, 367, 2904, 181, 19 ,897),

(2016, 2017 ,412, 3373 ,203, 21, 1005);

CREATE TABLE coalConsumption( yearFrom int ,

yearTo int ,

coalIndustry int);

SELECT \* FROM coalConsumption;

DROP TABLE coalConsumption;

INSERT INTO coalConsumption VALUES (2012 2013 176),(2013 2014 207),(2014 2015 191),(2015 2016 263),(2016 2017 275);

CREATE TABLE gasConsumption (yearFrom int , yearTo int ,

gasIntrustry int, gasTransport int, gasResidence int, gasBuilding int, gasAgriculture int);

SELECT \* FROM gasConsumption;

DROP TABLE gasConsumption;

INSERT INTO gasConsumption VALUES (2012, 2013, 8029\*0.935, 1137\*0.935 , 2541 \*0.935, 213\*0.935, 22\*0.935 ),

(2013, 2014, 9612\*0.935, 1136\*0.935, 2875\*0.935 , 252 \*0.935 ,23 \*0.935 ),

(2014, 2015, 9956\*0.935, 1215\*0.935, 3346\*0.935, 257\*0.935, 23\*0.935 ),

(2015, 2016, 10461\*0.935, 1316\*0.935, 4260\*0.935 , 254 \*0.935, 26 \*0.935 ),

(2016, 2017, 10555\*0.935,1330\*0.935, 4373\*0.935 , 245 \*0.935, 28\*0.935 );

CREATE TABLE powerConsumption(yearFrom int , yearTo int ,

powIntrustry int, powDomestic int, powCommercial int, powOthers int, powAgriculture int);

SELECT \* FROM powerConsumption;

DROP TABLE powerConsumption;

INSERT INTO powerConsumption VALUES (2012, 2013, 0, 0, 0 , 0, 0 ),

(2013, 2014, 12268\*0.283 , 18453\*0.283, 3312\*0.283, 46\*0.283, 173\*0.283 ),

(2014, 2015, 13306\*0.283\*0.283, 20470\*0.283, 3685\*0.283, 523\*0.283 , 1636\*0.283 ),

(2015, 2016, 15505\*0.283, 23017\*0.283, 4224\*0.283, 850\*0.283, 1633\*0.283 ),

(2016, 2017, 17819\*0.283, 25223\*0.283 , 4660\*0.283, 1005 \*0.283, 1553\*0.283 );

For Energy Supply(SQL) Source Table: Graph 2

create database project;

use project;

CREATE TABLE EnSOURCE(

yearFrom Integer,

yearTo Integer,

coal Integer,

oil Integer,

gas Integer,

hydro Integer,

import Integer);

drop table EnSource;

select \* from EnSOURCE;

INSERT INTO EnSOURCE VALUES(2012,2013,932244,5086469,22601,894,0);

INSERT INTO EnSOURCE VALUES(2013,2014,862761,5484966,23450,586.2266);

INSERT INTO EnSOURCE VALUES(2014,2015,835534,5321423,24843,566,3380);

INSERT INTO EnSOURCE VALUES(2015,2016,916086,5256020,27381,962,3822);

INSERT INTO EnSOURCE VALUES(2016,2017,992089,5888730,27957,982,4656);

INSERT INTO EnSOURCE VALUES(2017,2018,0 ,6400000,0 ,0 , 0);

**Output tables and quries:**

Intensity:

SELECT yearFrom + “ / “+ yearTo, AVG(Fuel) FROM INTENCITY\_T GROUPBY yearFrom + “ / “+ yearTo,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Output table** |  |  |  |  |
| FY | National intensity |  |  |  |
| ktoe/billion BDT |  |  |  |
| 2012/13 |  |  |  |  |
| 2013/14 | 3.23 |  |  |  |
| 2014/15 | 3.16 |  |  |  |
| 2015/16 | 3.20 |  |  |  |
| 2016/17 | 3.08 |  |  |  |
| 2017/18 |  |  |  |  |

UPDATE SOURCE\_T

SET FY\_VALUR \*= 99.933123148944

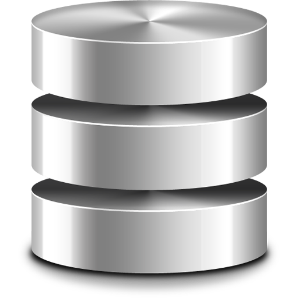
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Output table** |  |  |  |  |  |  |
|  | Coal | Oil | Gas | Non-thermal power | Renewable |  |
| FY | ktoe | ktoe | ktoe | ktoe |  |  |
| 2012/13 | 569 | 5,646 | 21,132 | 77 |  |  |
| 2013/14 | 526 | 6,088 | 21,926 | 245 |  |  |
| 2014/15 | 510 | 5,907 | 23,228 | 339 |  |  |
| 2015/16 | 559 | 5,834 | 25,601 | 411 |  |  |
| 2016/17 | 605 | 6,536 | 26,140 | 485 |  |  |
| 2017/18 |  |  |  |  |  |  |
|  | 0.00061 | 0.00111 | 0.935 | 0.086 |  |  |

**Architecture of the software :**

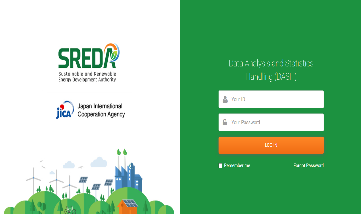
SREDA User



Request and store data



Get and store data



*DASH*

|  |
| --- |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

**Chapter:5**

**Problem and solution:**

The main problem that we have faced is that, one of us has started the project in his computer, and when he sends it to us to complete our work on it, it didn’t work in many of our computers.

What we have done is that each of us tried to create a new project in his/her computer and we have sent the code to that person to implement it.

**Additional Features:**

In our opinion the software should not only creates reports, it should also do some sort of analysis, calculations, and estimation for the projects in order to do a successful job.

**Reference:** mahady@iub,edu,bd

<https://drive.google.com/file/d/1nemkMtZ_dvKdE_VDuNlCbjuiGofBjgEd/view>

https://drive.google.com/file/d/1xESM5rcsz8gRbgpQGMnkOrV5RBIZWO\_A/view

**Conclusion & Recommendations**

In this chapter, we have illustrated that the business cycle for a new venture involves several development points, mostly under control of the entrepreneur. The key takeaways include the following:

-Project management is the primary tool for executing the business plan, installing the businesses processes and achieving the strategic ambitions of the entrepreneur.

-Project management helps to detail what tasks will be accomplished, who will be involved in completing the tasks and when the tasks should start and finish.

-Typically, project progress in steps or incremental stages; however other approaches for rapid, interactive project management are also widely used.

-Several tools can be used to manage the project and communicate timing and status, including task diaries, WBSs and Gantt charts.

-Projects fail for many reasons. It is management responsibility to determine whether the inherent risks in the project can be accepted and the project can be launched or whether the project be delayed.

**Appendix**

