VOL 3 DECEMBER 2016

MENTOR

KNOWLEDGE IS MULTIPLIED IN SHARING

WHY DO WOMEN LEARN?

POWER MANAGEMENT FOR AN ISOLATED COMMUNITY GRID CONTAINING PV BATTERY SYSTEM

DAYAN DAM AND DIVERSION STRUCTURE DESIGN (TRIPLE D DESIGN)

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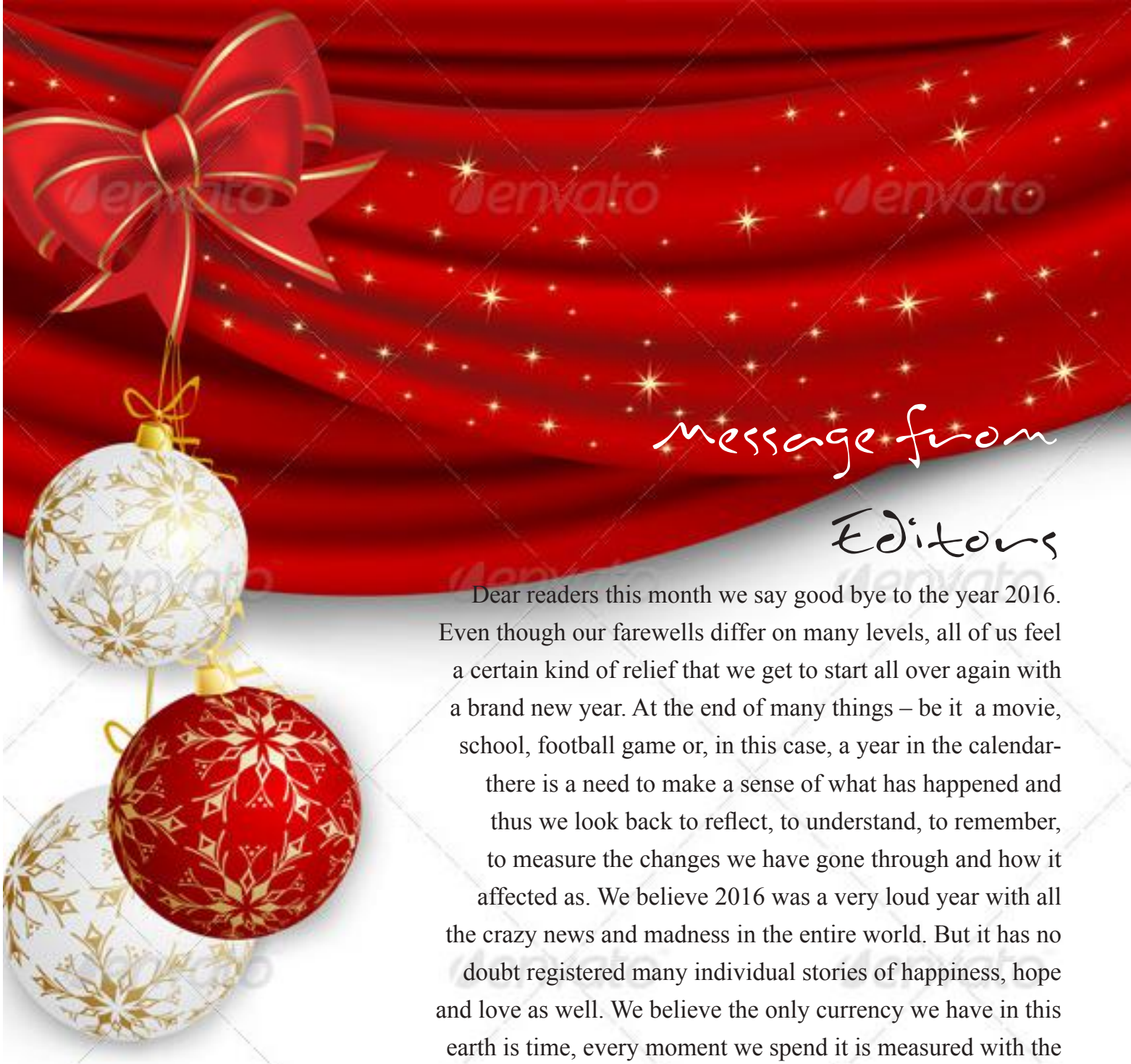
MOBILE BANKING SYSTEM

"DECEMBER'S QUOTE OF THE MONTH"

Contents



Message from Editors

Dear readers this month we say good bye to the year 2016. Even though our farewells differ on many levels, all of us feel a certain kind of relief that we get to start all over again with a brand new year. At the end of many things – be it a movie, school, football game or, in this case, a year in the calendar- there is a need to make a sense of what has happened and thus we look back to reflect, to understand, to remember, to measure the changes we have gone through and how it affected as. We believe 2016 was a very loud year with all the crazy news and madness in the entire world. But it has no doubt registered many individual stories of happiness, hope and love as well. We believe the only currency we have in this earth is time, every moment we spend it is measured with the time it consumes. Even though we feel hope for a better new year with a feeling of adventure for what is to come , there is also a feeling of burden for the time we have spent in the past year which has subsequently pushed us closer to the end of our lives. Since life is an unpredictable journey, we should spend every second we get aspiring to do good and be good. After all that's what it is all about. We wish you all a very happy new year!

MENTOR

KNOWLEDGE IS MULTIPLIED IN SHARING

POWER MANAGEMENT FOR AN ISOLATED COMMUNITY GRID CONTAINING PV BATTERY SYSTEM

1. HANA ABRHAM
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3.NATSNET HAILEMICHEAL
4.SELAM YEMANE

Simulating a dynamic system is a two-step process. First, a user creates a block diagram, using the Simulink model editor that graphically depicts time-dependent mathematical relationships among the system's inputs, states, and outputs. The user then commands the Simulink software to simulate the system represented by the model from a specified start time to a specified stop time.

ABSTRACT

With the increase in the level of global warming, renewable energy source (solar, wind…etc.) or distributed generator will increasingly play an important role in electricity production. Nowadays scientists are supposed to use renewable energy source, depend upon their advantage. But the problem is that the output from distributed generators using renewable energy is characteristically intermittent. Since the load is in continuous change and intermittent output of the PV battery, the supply and load demand will be in unbalanced condition seen from the generator. In addition to this problem various technical, Economical and environmental concerns the concept of micro grid has become popular in the electric energy industry.

This paper proposes active (frequency control) &reactive (voltage control) controller to minimize the mismatch between the supply and load demand. An algorithm is developed that control the output of the PV battery to meet the continuous change of the load. The proposed control algorithm is tested in MATLAB Simulink and the simulation results are presented for various operating events to demonstrate the effectiveness of the proposed control scheme in providing a desirable performance of community grid.

BACKGROUND

With the increasing of global resources and environmental pressures, the society pays more attention for the environmental protection, energy conservation and sustainable development. Meanwhile, with the process of the electricity market growing as well as the requirements of power users of power reliability and quality for the users, it requires that the future power grid must be able to provide a more secure reliable, clean and high quality power supply and adapt to various types of energy generating methods which can improve efficiency and effectiveness of large network assets and provide more qualified services capacity of the network. As a result the micro-grid concept is expected to be widely implemented. The concept of a micro grid involves interconnection of both small DGs(distributed generators) and loads through a local grid. These micro grid systems can be connected to the main power network or operated autonomously in an islanded mode when the main power network is seriously disrupted. In this paper we will focus only on grid connected to the main power network.

A distributed generator is defined as an electric power

source connected to the distribution network or directly at the customer application. Due to the increasing load requirements on the electrical system and the high capital investment that large centralized power plants require. The high penetration of distributed generation units in the electrical system can significantly impact the flow of power and voltage conditions at the end customers. A community grid can create a small robust system utilizing many of these distributed generation units by using local information at each generator. Community grids offer many advantages over the traditional centralized electrical system. The focus of this work is on the power reliability that distributed generation coupled with a community grid concept can achieve.

A micro grid is a claster of laod and microsources operating as a single controllable system that provide power to its local area. To that utility,themicrogrid can be thought of as a single controllable load that can respond in minute to meet the need of the transmission system. To the customer, the community grid can meet their special need;such as, enhancing localreliability,reducing feeder losses, supporting local voltage, providing increased efficiency through the use of waste heat,voltage correction or providing uninterruptible power supply function.

OBJECTIVE

The aim of this project is to encourage the use of renewable energy such as solar photovoltaic, wind energy etc. in power system.

METHODOLOGY

In order to achieve the research objectives the research is divided into following sub-tasks:

Task 1

Collection of information about conventional energy and the reasons that make people to look for other source of energy

Task 2

Different options of generating renewable energy and its operation, advantages, and types

Task 3

Photovoltaic solar system and its different types (stand alone or grid connected) and explaining the major system component of it

Task 4

Creation of the system and interconnection of renewable source withthe grid to supply the domestic loads

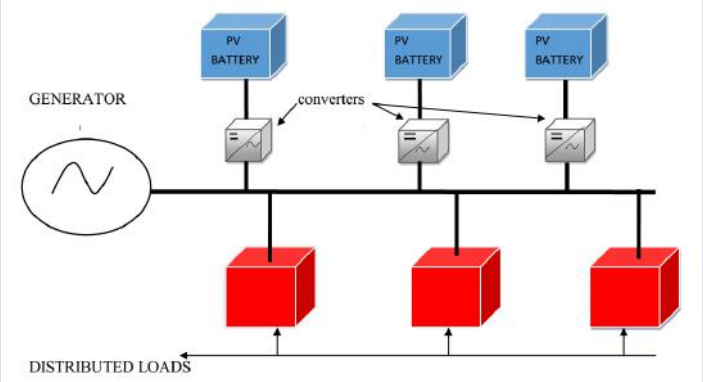
THE IMPORTANCE OF THE PROJECT

It helps to reduce environmental pollution and global warming which are key factors for preferring renewable resources over fossil fuels	It helps to reduce distance between source and load ,reduction of physical and electrical distance between source and loads contribute the improvement of reactive power support of the whole system, thus enhancing the voltage profile. While transmission of bulk power over longdistances cause technical drawback such as the high power loss, transmission network congestion and right of way issues
To encourage the use of renewable energy such as solarphotovoltaic ,wind energy etc. in a power system	It delays the huge investments that the update of transmission and distribution networks requires
The comparison between power system and community grid, give fullplay to the advantages of community grid , andfurther improve the operation performance of powersystem, meet the higher demands of power quality andreliability, microgrid technology comes into being	Stable operation of the system and load satisfaction

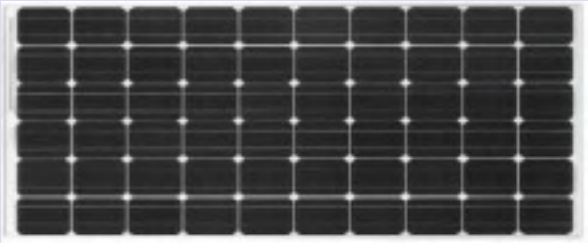
Task 5

writing the thesis

GENERAL BLOCK DIAGRAM



2.1.2 PHOTOVOLTAIC PANEL



The earth receives energy directly from the sun. The sun's power reaching the earth is typically about 1000W/m2. The total amount of energy that the earth receives daily is 1353W/m2. Some 4million tons of the sun's matter will continue to be changed into energy every second. The solar radiation arrives at the earth at a maximum flux density of about 1kw/m2 in wave length of band between 0.3 and 2.5μm.This is called short wave radiation and it includes visible spectrum. For habited areas fluxes received vary widely from about 3 to 30MJ/m2/day, depending on place, time and weather.

- ✓ Grid-connected solar PV systems: A building has two parallel power supplies, one from the solar PV system and the other from the power grid. Whenever the solar PV supply exceeds the building's demand, excess electricity will be exported into the grid. When there is no sunlight to generate PV electricity at night, the power grid will supply all of the building's demand. Our project is grid connected PV system.

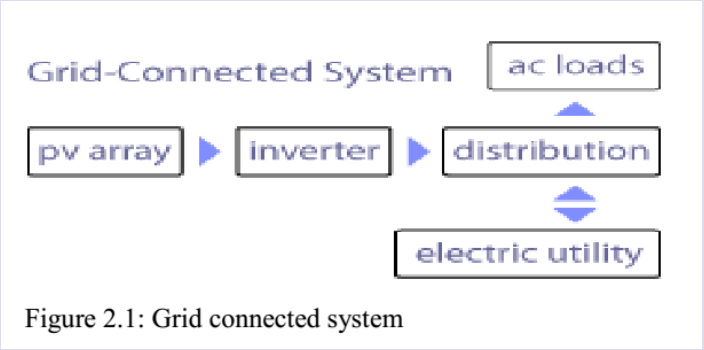


Figure 2.1: Grid connected system

- Component of Photovoltaic System

PV system components are:

Figure2.2: Component of photovoltaic system

PV system components are:

Inverter

- required to convert the direct current (DC) power produced by the PV module into Alternating current (AC) power.

Battery

- used to store solar-generated electricity

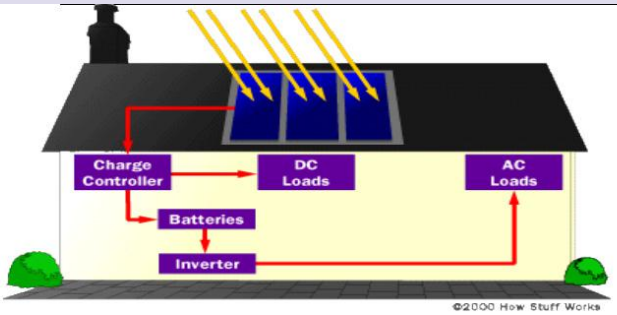


Figure2.2: Component of photovoltaic system

a) DESIGN OF PHOTOVOLTAIC SYSTEM

Design of photovoltaic systems depends on:

- Solar radiation available in the region-
- Power needed - an account the ability of devices -
- Identify components of solar energy systems-
- Cost of solar cell system-

2.1.3 LOAD

The loads on a power system consist of a variety of electrical devices. Some of them are purely resistive. Loads with active and reactive components vary with voltage interact with transmission characteristics by changing the power flow through the system.

2.2 PROGRAMMING LANGUAGE AND SOFTEWARE USED

MATLAB integrates computation, visualization, and programming environment. Furthermore, MATLAB is a modern programming language environment. These factors make MATLAB an excellent tool for teaching and research.

- ✓ The MATLAB Language

The MATLAB language supports the vector and matrix operations that are fundamental to engineering and scientific problems. It enables fast development and execution. Simulink (software package that enables you to model, simulate, and analyze systems whose outputs change over time)is the important MATLAB enlargement which simplifies the computation very much. You just drag and drop the blocks to the new window from the block libraries and connect them and run the model.

WORKING PRINCIPLE OF THE SYSTEM

This will examine control of active power and reactive power.The flows of active power and reactive power in a transmission network are fairly independent of each other and are influenced by different control actions. As constancy of frequency and voltage are important factor in determining the quality of power supply ,the control of active power and reactive power is vital to the satisfactory performance of power system.

3.1 ACTIVE POWER AND FREQUENCY CONTROL

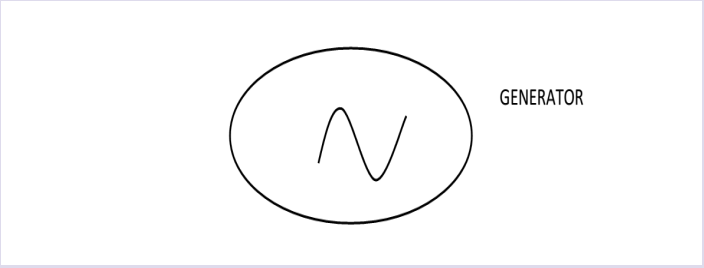
Active power control is closely related to frequency control, and reactive control is closely related to voltage control. For satisfactory operation of a power system, the frequency should remain constant. Relatively close control of frequency ensures constancy of speed of induction and synchronous motors. Constancy of speed of motor drives is particularly important for satisfactory performance of generating units as they are highly dependent on the performance of all the auxiliary drives associated with the fuel, the feed water and the combustion air supply systems .In a network considerable drop in frequency could result in high magnetizing currents in induction motors and transformers. The extensive use of electric clocks and the use of frequency for other timing purposes require accurate maintenance of synchronous time which is proportional to integral of frequency. As a consequence, it is necessary to regulate not only the frequency itself but also its integral.

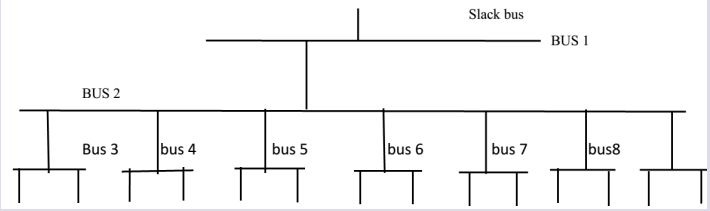
The frequency of a system is dependent on active power balance .As a frequency is a common factor throughout the system, a change in active power demand at one point is reflected throughout the system by a change in frequency.

3.2 REACTIVE POWER AND VOLTAGE CONTROL

Reactive power is required to maintain the voltage to deliver active power (watts) through transmission lines. Motor loads and other loads require reactive power to convert the flow of electrons into useful work. When there is not enough reactive power, the voltage sags down and it is not possible to push the power demanded by loads through the lines.

3.2.2 NETWORK DIAGRAM

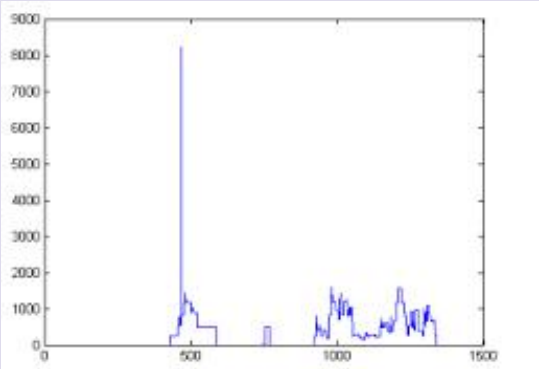




POWER FLOW ANALYSIS

Successful operation of electrical systems requires that:

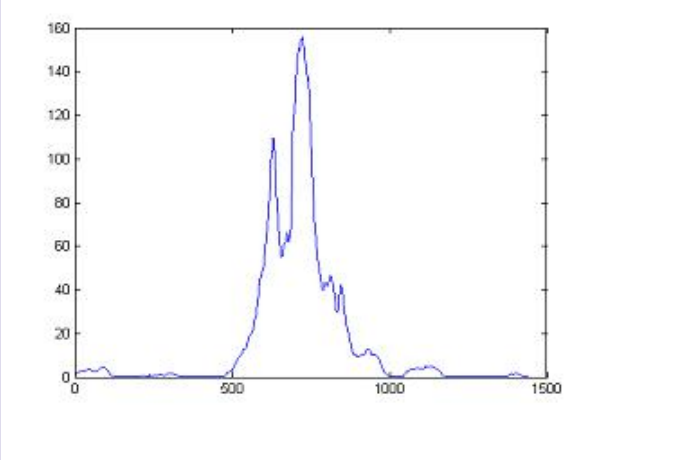
- Generation must supply the demand (load) plus the losses,
- Bus voltage magnitudes must remain close to rated values,
- Generators must operate within specified real and reactive power limits,
- Transmission lines and transformers should not be overloaded for long periods.

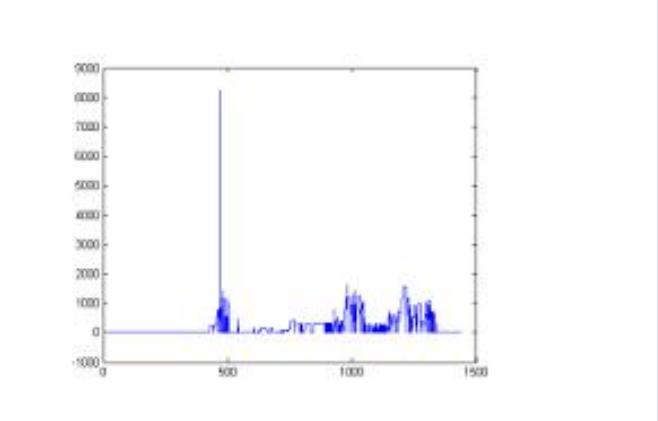


EXPERIMENTAL RESULT Tim

Time (in sec)

PL (LOAD POWER)

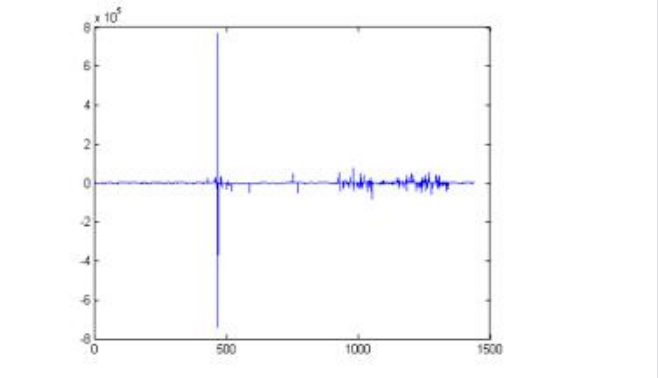




Ppv (PHOTOVOLTAIC POWER)

POWER OF THE GRID (Pbygrid)

The above figure shown is Pbygrid verses time.



CONCLUSION

The use of distributed generation sources in a micro grid structure is one solution to the problem of providing reliable power .A control system was developed for a micro grid for an office. The effectiveness of this control system, which consisted of a photovoltaic and a battery, was confirmed both by experimental verification tests and by simulations. The results yielded the following conclusions:

The control system effectively

- Controlled the power flow at the connection point to the utility
- Controlled the electricity exchange between the micro grid and utility
- Controlled the state of charge (SOC) of the battery

The rated power ratio of renewable energy installed in the micro grid can be increased beyond 50% in

the energy supply system.

Hence the output of the distributed generation is controlled

FUTURE SCOPE

These features created issues that needed to be solved in order to successfully implement them in a control for distributed generation. The control has been extensively tested on software simulations and then digitally implemented on hardware platform.

REFERENCES

- GUO Hai, Su Jianhui, Zhang Guorong. Research Status of MicrogridTechnique.Sichuan Electric Power Technology.2009(02)
- Yuen, C; Oudalov, A; Timbus, A; the Provision of Frequency Control Reserves from Multiple Micro-Grids. Industrial Electronics, IEEE Transactions on
- Wang Shouxiang, Wang Hui, CAIShengxia. A Review of Optimization Allocation of Distributed Generations Embedded in Power Grid.Automation of Electric Power Systems. 2009(18)

JOKE

TEACHER:

WHO CAN MENTION LIVING ORGANISMS WHO PREPARE THEIR OWN FOOD?

STUDENT:

BACHELORS!!!

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MOBILE BANKING SYSTEM

Bilal Adem / Eyob Gebreamlak / Filmon Habtemariam
Hanna Yohannes / Natneal Tesfamariam / Yemane Measho

Project summary by : Filmon habtemariam

Mobile Banking is one of the newly emerging bank supporting system following the internet banking .It enables bank users to access the different bank services provided by their bank ,by using their mobile phones in a wireless network connection .It extends the usability, accessibility and remoteness of the previously existed traditional bank services. The wireless network connection used here is provided by a wireless operator who has a service deal with the bank. The wireless operator can be a mobile network operator or an ISP. The wireless operator provides a network infrastructure in which mobile banking system implemented which is needed to deliver bank services to users.

EVOLUTION OF MOBILE BANKING

Banks are constantly on the search for solutions which will help reduce their cost of operations and improve customer experience .In this continuous journey, the banking industry has seen several technology trends being adopted and several innovations delivered. Innovations in banking delivery channels dates back to the introduction of ATMs as a self-service delivery channel. The ATMs heralded a new era of banking as the concept of self-service was introduced for the first time. ATMs also marked the entry of anytime banking as customers could now access money from their bank accounts at a time of their convenience. The wave of self-service continued and the advent of Internet banking introduced the concept of anywhere banking as customers could now access their bank accounts from the comforts of their home or office.

The new wave of technology-led delivery channels had caught up with the traditional branch banking and the customer experience from these new delivery channels had set new standards. However, banks noticed a trend-balance inquiry of mini statement transactions .This trend began to add to the cost pressures on the ATM channel. Internet banking was facing its own battle as security issues loomed large and customers restricted usage of Internet banking to their home and office computers. The time was ripe for a delivery channel which enabled banks to solve the issues plaguing the existing technology channels. This came in the form of mobile banking as banks began to tap into the potential of offering banking to the mobile savvy new generation customers.

Over the years, mobile banking has evolved from a simple information delivery channel to a comprehensive banking transaction channel and the journey has been fueled by both growing business needs and progress in mobile technology.

MOBILE CHANNEL PLATFORMS:

mobile banking system can use a variety of media channels including Short Message Service(SMS), mobile web and mobile client application(i.e. downloadable mobile app) . Each mobile media channel has its strengths and weaknesses and it is important to identify the delivery mode that is most appropriate for each banking service. Our project is based on the mobile client application media channel. We develop an android app besides the main system.

Why mobile client App is needed by a bank:

- Ease of use.
- To implement strong user authentication, and secure tunnel and end-to-end. connection with bank servers.

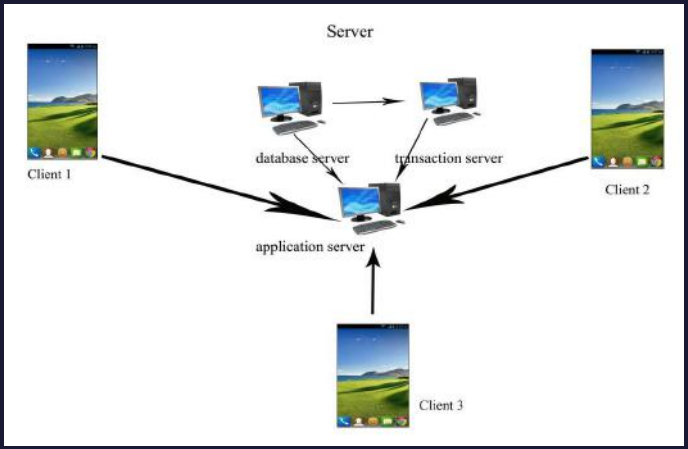
- To extend all bank functionalities.
- More control over user experience, with rich user interface experience.
- Enables the user to connect to the bank to access bank services.
- Easily distribute updates, upgrade, and easily manage the device and application configuration.

MOTIVATIONS TO DO THE PROJECT

Banking system in our country is a fully traditional, no other bank supporting systems such as ATM, online banking and mobile banking solution implemented yet. Local people have to go physically to the bank with their banking books so as to perform any simple services (saving, fund transfer, transaction payments…) that the bank provides. To do this task they have to wait and queue for a long time, not only this, but also customers face delay inside the bank (manual authentication, signature). Every time they appear to the bank, they are in the same routing, technically this is tedious task. And the other point is that rural people are not benefit able with the existing system due to remoteness of their habitant. In Eritrea banking system has been manual because of security reasons and infrastructural problems. Even though there are some less expensive infrastructures that can provide Wireless services in which online banking and mobile banking can be implemented, no local internet or wireless based banking exists yet. This could be mainly due to security treats hence, when we talk about banking; the first thing that invoked in our mind is security (how to handle it).

ADVANTAGES OF THE PROJECT

- Secure end to end encryption of user credentials, input and secure access.
- Allows bank to provide real time information (online transaction, transaction history, and account summary….etc.) to customers.
- Best user experience in using the system interface hence it provides flexibility and user friendliness.
- Proper authentication for customers using various layers of security.
- Implements most of the services that the manual system provides.
- Diversity across the country.
- Time Saving.



Some of the various operational services that are provided by our mobile banking system are:-

- Registration for new mobile account.
- Transaction verification/proper user validation to access bank services.
- Account alerts and security alerts.
- Fund transfer /money transaction.
- Withdraw money.
- Enquiry of account balance.
- Update the Transactions.
- Transaction history.

AIM OF THE PROJECT

- To help reduce the different operational problems and operational cost spent by both users and the bank which are currently exist in the local banks.
- To save time that is instead of physically going to the bank users can remotely use any bank service by using their mobile units.
- To enable rural people use the available bank services remotely.
- To help users experience mobile based bank services.
- To implement most of the services that the manual/traditional system provide.
- To allow bank to provide real time information to customers and employees

PROJECT ARCHITECTURE AND STRUCTURE

Our project inherit both client and server architecture.

Client side: users must use the android app that they have installed in their android mobile phone to get the bank service they want .Client users can do the

following functionalities on their handsets: create new account, account transaction, login/logout, view account balance, fund transaction, change account password, transaction password and history count, access help, customer call service.

SERVER SIDE: All users' services requests are processed by the bank servers. The internal server operations are managed by the Bank manager and bankers. Our system gives them different user access level .each user levels can do the following functionalities.

A. BANK MANAGER: grant mobile access, set interest rate, limit withdrawal/transaction amount, generate password and code, register employee, add-drop-change states of employee or user, login/logout to his account, and change his account password.

B. BANKER: register new customer/new fund, withdraw/deposit money for user, request mobile bank service for users, code supplier, login/logout to his account, and change his account password.

SECURITY IMPLEMENTATION

Security is the vital thing especially in a system that provides various bank services. It determines the success or failure of a system. There are certain elements such Confidentiality, Integrity, Availability to be fulfilled as a result of security implementations. Some of the security mechanisms we implement are

1. SSL-This provides a secure tunnel to secure the communication between client and server so that messages can pass through safely.

2. SHA1-we use this to encrypt the input data.

Example:-SHA1 ("mobilebanking") =b53a3a983584bc68b90a1dabf174de969c2e554d

2. SQL Injection Preventions: a. parameterized b. blacklisting c. whitelisting

COMPONENTS AND TECHNICAL SOFTWARES USED:

We have used SQL database management, WAMP server and MySQL database for managing and handling the system data. Our project mostly uses java as a core programing language but we also include some other languages to extend the functionalities of our project. While developing the project we faced certain Challenges .the major challenge is that different devices have different screen sizes and resolutions .overcoming this problem enables users to experience consistent GUI and work flow when using the banks android mobile app in different android handsets. We use bootstrap packages in our system to handle this problem.

F.A.Q

Q: Why the project is based on the mobile client application media channel not SMS or Web Client?

A: To ensure secure end to end encryption of user credentials, input and secure access. We did not choose SMS because SMS supports only up to 160 characters in our case we need more than that, besides it lacks to provide powerful security and rich applications .And web client includes nonstandard variety of browsers and OS hence they are little secured and lack to provide consistent user experience due to varying connection speed and handset limitation.

Q: Does your system support all mobile platforms ?

A; For time being, we have only concentrated on android OS devices hence it is the leading, most popular, upcoming and widely used mobile platform in our country and across the world .Our mobile banking system app supports more than 18 android versions starting from Android 1.0(API-1) up to the latest android versions.

Q: what are the data security measures taken in the project ?

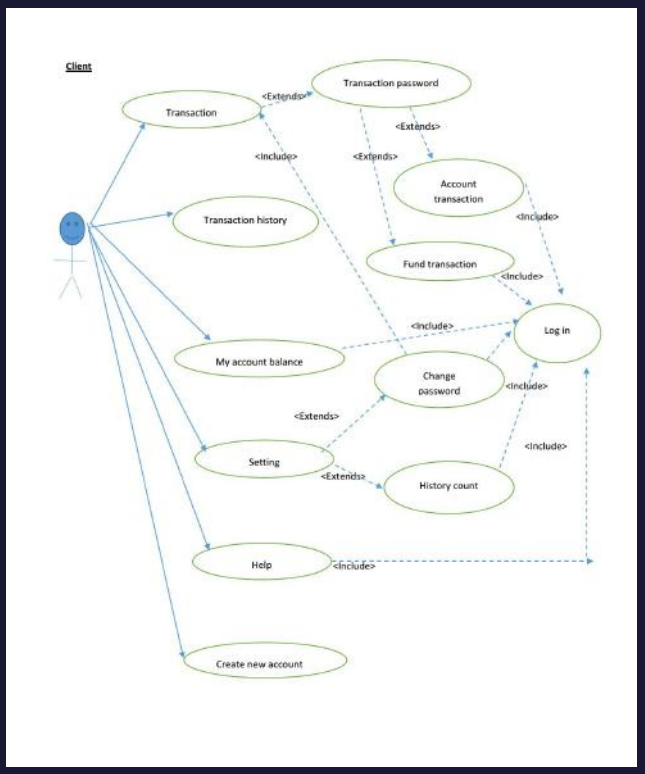
A: since our system include both front and back end

*** The front end security authenticates user to enter a valid account name and password to gain access to his account.**

*** The back-end security authorizes through permissions. Each type of user is assigned a permission special to his job. That is a bank employee has only the privileges of an employee and cannot gain the bank admin access .each level of user is asked for user name password .On top of these data encryption ,secure channel, account alerts and security alerts are included**

FUTURE ENHANCEMENT

- Loan functionalities.
- More advanced security mechanism.
- Bill payment services through the app.
- Include other mobile OS platforms such as ios ,windows.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Transaction history
Fund transaction
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My account balance
Change password
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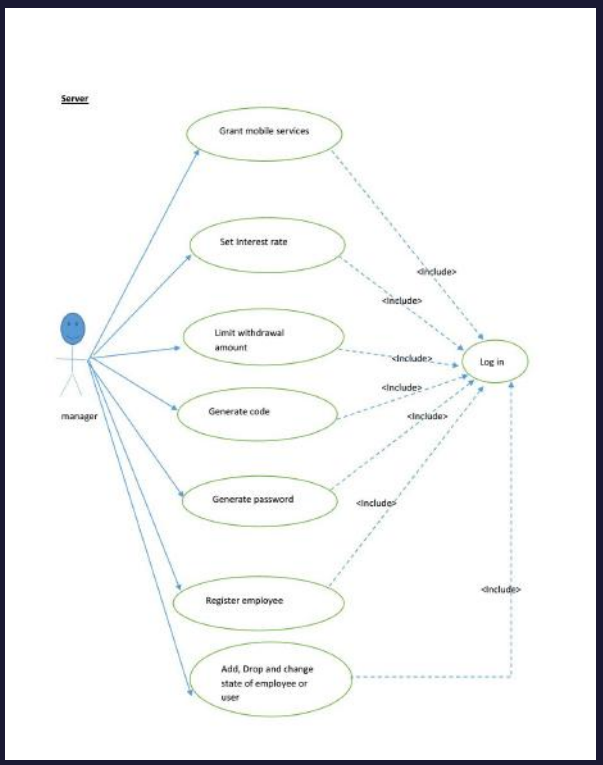
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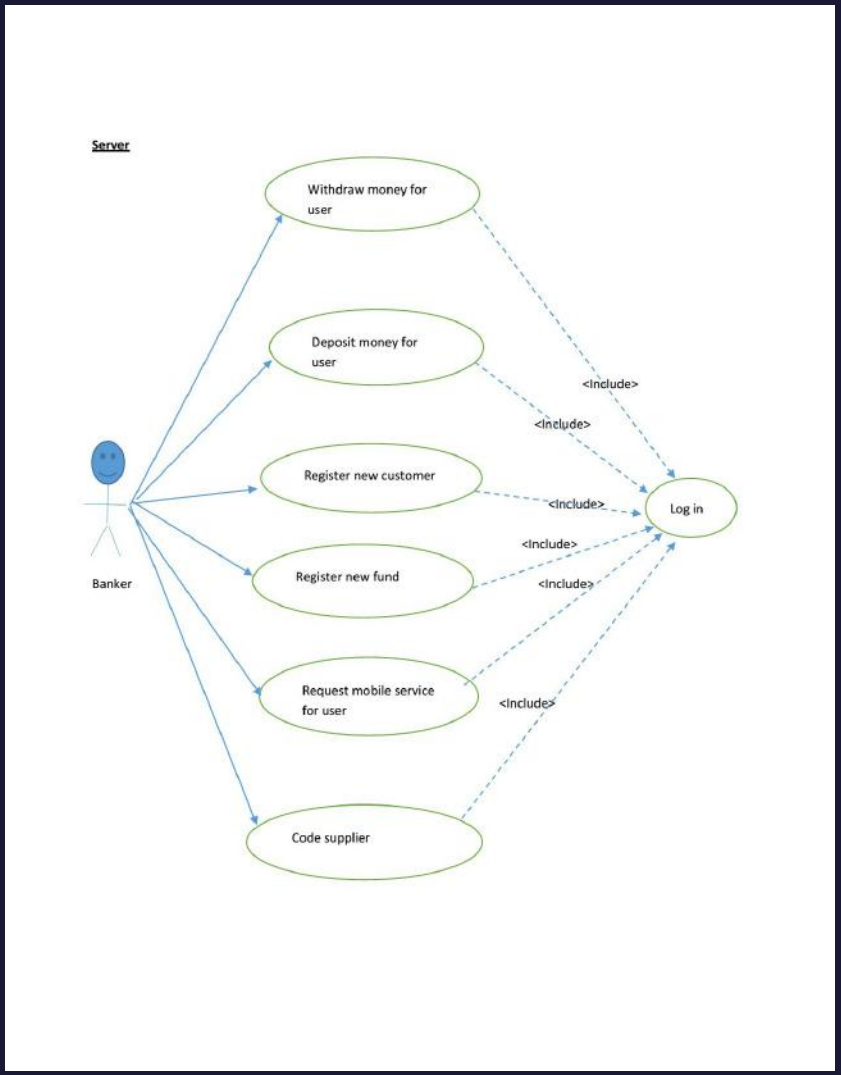
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MENTOR
KNOWLEDGE IS MULTIPLIED IN SHARING
MAGAZINE
WISHES
ALL
READERS
A
MERRY
CHRISTMAS
AND
HAPPY
NEW YEAR

Quote of the MONTH

"The man who does not read good books has no advantage over the man who can't read them"

Mark Twain
1835 - 1910

The message is clear: not reading is another form of illiteracy. Most often, people do the mistake of confining reading within the scope of academia and school life. For many of them, reading signifies hard times memorizing classroom notes and handouts, or a tedious night cramming for exam. This verse reminds us that reading by itself is bigger than academia. And it warns us that those who don't read dare not point their fingers at those who can't.

Send us your Favourite Quotes and impression notes HERE!

WHY DO W

BY EARTHLING

As it is said, this is a man's world. Everything is run by men- the entire decision making, all the economic and financial power and the religious power. Everything is written for men and probably by men. So in this pre-designed world, where is a woman's place?

First, we have to know where we are and what our current place in our society is. Second, what do we want to accomplish or who do we want to be. And last how do we get there.

Where we are is different to each and every one of us. Also where we want to be differs with individual ambitions but when it comes to the how there is only one way and that is getting educated.

First and foremost, the idea that women all over the world are subject to the same conditions and react the same way is totally wrong, so before you try to find solutions to problems that women face, you should categorize the many complicated and intricate dynamics of women's social fabric in the entire world.

Women have managed to earn the right to learn but how will we use it to make our mark?

Among the problems faced by women in our world in their fight for equality and fairness are the problems that they face never really go away but they keep on mutating and changing their forms to get the same effect on women's lives. The obstacle with women's education is of similar nature.

Why should women learn? It seems like an already won debate. No one could argue in this modern era that there is no need for schooling girls because he/she will have to provide the convincing fact as to why that is. Surely enough this is an impossible argument to make.

But the question has been rephrased as or mutated in to, why do women learn? This seems to me like the most appropriate question at the time that needs appropriate answer and the next stage of the battle for women's education.

Why do they spend all those years in school? To what end? To do what? What do educated women do? The supporting answers given to this questions is , women end up getting married and having kids which takes them out of the system or work places rather quickly and most of the time they don't come back. So the argument goes if there is no or limited input to the system ,why waste valuable resources and time on educating them? By limiting their education and shortening the time spent on learning, society can have women with the basic education to cope with the world's states quo and invest their prime age in child bearing and rearing.

This type of views can be said to have substantial support from the general public but not necessarily everyone. Funny enough almost everyone goes along with it. In my opinion this is because there is no significant change

WOMEN LEARN?

or efforts made by educated women (not all, but the larger bulk of them) to prove this wrong. The paradox here is these educated women are the proff given to substantiate the claims made by those people.

Some may say this is outrageous or even inhumane to say such things about women; after all they are the one that sacrifice the most for everybody else. But that's the thing we should face reality instead of being deaf to this assumptions in peoples mind and actively deterring or tabooing this opinions from being openly discussed and everyone hearing them and reacting to them and exchange ideas between groups of people who are less likely to engage with each other.

If these conversations don't happen no matter how stupid they seem to be we cannot make progress in convincing people. Because people tend to go along with likeminded counterparts, this creates alter realities to this groups in which they are always right and if they continue to go unchallenged the assumptions they have turn in to facts on the ground.

The reason women need to learn is exactly the same as to why men learn but somehow women are entangled with different views as to why they should do anything. People seem to believe they have an uncontested right to have an opinion or even dictate what is right for women and what they should do. This is the only difference between the situations women and men find themselves in. Other than this the ambitions are exactly the same.

-We learn in order to acquire the tools needed to be a capable decision maker.

-We learn to be able to participate in the intellectual activities may it be in producing them, assessing and debating them or consuming and utilizing them.

-We learn in order to create new things that are unique and important to us

-We learn to chip in to the economic growth of our societies and become the benefactors. After all. we make 51% of the society and our participation accelerates growth by almost a double.

-We learn to gain financial independence to earn money and spend it as we see fit. It is one of the basic human individual freedoms

To do all these things we need certain kind and specific skills. We can only get these skills by being educated may it be formal or not. Freedom of mind or freedom of thinking is the ultimate goal we can have and being competent enough to make informed and mature decisions that are compelling enough to earn us respect and trust in our abilities from our whole society. So in the end we learn to understand and be understood.

Women are creatures with too many strings attached, by arguing for education we relieve them of one of those chains that binds them which is illiteracy. But we have so many more chains to break to truly be what they aspire that is in control of themselves and masters of their fate.

DAYAN DAM A
DIVERSION ST
DESIGN
(TRIPLE D DES

Bisrat Tekle.
Daniel Asmerom.
Dawit Kidane.
Denden Yemane.
Efrem Abraham.
Ermias Sium.
Merhawit Yebio.
Milli Tesfalidet.
Yohanna Yohannes.
Yonas Teweldemedhin.


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TRUCTURE
SIGN)

1. INTRODUCTION

1.1 General Background

Water is a precious natural resource, vital for life, development and the environment. It can be a matter of life and death, depending on how it occurs and how it is managed. When it is too much or too little, it can bring destruction, misery or death. Irrespective of how it occurs, if properly managed, it can be an instrument for economic survival and growth. It can be an instrument for poverty alleviation, lifting people out of the degradation of having to live without access to safe water and sanitation, while at the same time bringing prosperity to all (UN-WATER/AFRICA, 2004).

Human welfare and economic development generally depend on the use of water. In Africa, water resources management and utilization is crucial to the continent's efforts to reduce poverty, grow the economy, ensure food security and maintain the ecological systems. This approach may be attributed partly to the disjointed sectorial approach to development planning in the country and the idea that water is a public good.

Eritrea is located in Northeast Africa (between 12° and 18° north, and 36° and 44° east) covering an area of 125,000 square kilometers and includes the Dahlak Archipelago and other islands along the Red Sea coast. Sudan borders the country to the north and west, Ethiopia to the south, Djibouti to the southeast and the Red Sea to the east and northeast. The country is divided into six administrative zones called Zobas. They are Zoba Ma'ekel, Zoba Anseba, Zoba Debub, Zoba Semenawi Keyih Bahri, Zoba Debubawi Keyih Bahri and Zoba Gash-Barka.

The climate in Eritrea ranges from hot arid (in the coastal plain areas and western lowlands) to temperate sub-humid (in isolated micro-catchments within the eastern highland escarpment area). The total annual rainfall tends to increase from north to south, from less than 200 mm at the northern border with Sudan to over 800 mm in a restricted area on the southern border to Ethiopia. The problem of inadequate total rainfall over most of the country is compounded by the high variability of both total rainfall and its distribution. Like the rest of Sahelian Africa, Eritrea receives its rainfall from the Southwest monsoon from April/May to September/October except for the coastal area, which receives their monsoon rain from the Indian Ocean. The rain is bimodal starting with a little rain in April/May, followed by a dry period and then the main rain comes from July and until October.

Eritrean Government faced formidable challenges following independence. With almost all infrastructure destroyed, the Eritrean Government was required to build all necessary infrastructures from scratch. Water resource development for domestic and/or irrigation purposes is one such infrastructure the Government of Eritrea is working on. Almost all of the main towns in Eritrea, except Asmara, are supplied with water from underground sources. Massawa is fast growing port city with an old system and inadequate water supply source. The main purpose of this study is to identify a sustainable water supply source for Massawa.

1.2 Existing water supply source for Massawa town

The main water source is the Yangus River at Dogali. The water is abstracted by an infiltration gallery (constructed at the beginning of the 20th century), which is out of operation since 2004, and by pumping from shallow wells. The maximum production capacity is about 70 l/s, however, the current production usually varies between 20-45 l/s and goes down to 10 l/s in drought periods. (GITEC, 2005) The water from Dogali is transmitted by a gravity pipeline of 12.5 km to Massawa town. Because of the water shortage, some wells in the vicinity of the Yangus River, in the Me'ade Shed close to Massawa and in the Tagodel River at Hirghigo are used for additional water supply for Massawa by water truck.

In the port, renovations are being carried out and infrastructure is being constructed, but there are until now, no proposals to solve the overall water supply problem.

1.3 Need for Project

The inhabitants of Massawa have been experiencing acute water shortages for the past decades. The industries, institutions and various trades also feel the water shortage very much. Some areas do not get water at all. Massawa will be a very important port city due to planned industrial free zone, marine resource exploitation, expected tourist growth and expansion of port among others and hence fully fledged water supply project with sustainable water supply source is well justified.

There is an irrigable area of 2,460 ha known by the name Emberemi plain located beyond the Massawa airport. This area has been irrigated by Italians previously and assumption is made that this area can be irrigated.

In the Eastern Lowland of Eritrea, where Emberemi Plain is located, household food insecurity is largely attributed to the low food availability, poor accessibility and poor utilization. These three constraints

are attributed to low agricultural production, which is a result of poor rainfall and lack of rural infrastructures, traditional water management practices and nonexistence of related farm extension services, thereby limiting opportunities for income generation. The concept that is the blend of spate and pressurized irrigation scheme that envisaged for Emberemi plains will include the construction of a permanent diversion structure at Damas River that directs the water to Yangus River, an off-stream reservoir at Yangus tributary and a supply canal for controlled irrigation during dry periods.

1.4 Objective of this project

The objective of this project is to secure water supply to the town of Massawa and its environs and to deliver water to irrigable area of Emberemi plains, by designing a dam which will be constructed in the Yangus River catchment and renovating the diversion structure in the Demas River.

1.6 Expected result of the project

1. Solve the scarcity of water supply of the city.
2. Improves the ground water table level of the local area.
3. Initiates the irrigation of the nearby areas of the river.
4. Allows the treated water to go under gravity only, till it reaches Massawa port. There will be no need of pumping systems.
5. Moreover, supply water to communities located along the supply line.
6. It is a measure to boost agricultural production which plays a very important role in achieving the national economic policy, self-sufficient by reducing food insecurity.

1.5 Scope of the Study

This is a study that will lead to the design works of water supply source, treatment plant and main conveyance pipeline of the Massawa water supply project. The scope of this study includes:

- Preparation of water demand for 40 years design period up to 2050.
- Quantifying annual catchment water and sediment yield.
- Prepare preliminary design of the water supply systems.

2. NEEDS ASSESSMENT

In any water related projects water demand analysis is one of the most important steps in the design procedure. Since the objectives of the project is to supply the required amount of water for the command area, then sure enough, the supply from the reservoir has to be equalized with the demand of the water supply and possibly irrigable area.

The base for the determination of the demand for Massawa town water supply is the total population of 24,900 in 1995 (NRCE report). A population growth rate of 3% up to the year 2010 and a population growth of 5% up to 2050 are assumed for demand calculation. It is forecasted that major economic expansion due to tourist growth, promotion of free zone, exploitation of marine resources, mining opportunity, and migration to seek jobs will boost population growth. For preliminary planning water use per capita of 150 lit/day/person is used.

The project site is located close to the Emberemi plains which could be a potential water source for agricultural practices in the area. It is estimated that there is 2000ha irrigable area in that plain.

Standard methods for population estimation and forecasting

- Arithmetic Increase Method
- Geometric Increase Method
- Incremental Increase Method

Standard methods for irrigation Water demand estimation

- the modified penman method
- the pan method
- the radiation method
- Blaneycriddle method

By end of 2050 the domestic water requirement of massawa and Water requirement for irrigation demand determined.

3. CATCHMENT CHARACTERIZATION

Damas River at the Proposed Diversion Site and Yangus Tributary at the Proposed Off-Stream Reservoir

4. HYDROLOGIC ANALYSIS

4.1 Estimation of Mean Areal Annual Rainfall

In arid or semi-arid countries like Eritrea, the optimum national network can only aim to produce areal rainfall input estimates with acceptable precision on a seasonal or annual basis. Mean annual areal rainfall for the required period may be estimated in a number of different ways. This includes Isohyets, Thiessen polygons, Triangles, Percent-Normal and Arithmetic Mean. The Arithmetic Mean method is good estimator for rainfall values in
and adjacent to the study area which is employed in this study.

4.2 One Day Maximum Design Rainfall

One day design maximum rainfall is the main input component of almost all the models for calculation of the standard return periods. The design of 2, 5, 10, 20, 50 and 100 years return period design rainfall are estimated using both statistical and graphical methods. The Normal, LogNormal, Log-Pearson Type III and Gumbel (EV1) extreme value distributions (EVDs) are fitted to AMS, which is plotted in the form of Weibul Plotting Position. From the fitting of the different extreme value distribution (EVD) to plotting position it was decided to adopt Anti-lognormal rainfall values for the standard return periods as the best estimates. Design rain fall is the maximum one day (24 hours) rainfall depth. Which is expected to occur once in the design life of the structure, in this case (100 years) is adopted.

4.3 Catchment yield

The total yearly runoff, expressed as the volume of water entering/passing the outlet point of the catchment, is thus known as the catchment yield, and is expressed in Mm^3 or (Mha.m) and this will help in designing the capacity of the reservoir and fix the outflows from the reservoir. A minimum 35 years record is needed, but such a long term data is rarely available in Eritrea.

This dependable rainfall value is then converted into the dependable runoff value by empirical formulas that relate yearly rainfall with yearly runoff. Some of these formulas are:· Binnie's percentages
· Strangers tables
· Barlows tables
· Lacey's formula
· Ingli's formula; and
· Khosla's formul

Since Binnie , Stranger, Inglis and Khosla"s formulas and tables are locals of Indian states, In this case Barlow's tables and Lacey's formula will be used because they take the catchment's characteristics and nature of seasons in to account. In this project, catchment yield obtained by the Barlow's is chosen.

4.4 Peak discharges

Due to lack of sufficient hydrological data and physiological position of Eritrea which is arid and semi-arid areas, the available data is highly unreliable and variable. Having the possible and available data, the determination of design discharge will be based on the methods that would be best suited for the project area. The methods used for estimation of peak discharge are· Binnie formula
· SCS peak flow method
· Rational method
· Dimensionless unit hydrograph
· Transfer method

5. SEDIMENT YIELD ESTIMATION

Sediment load is the main killer of our water reservoir capacity and causes flooding in our diversion structures. Even though the impact of sediment transportation is significant in our downstream water resources development projects, less attention have been given and in some cases it is not considerate in designing of projects.

Ultimate destiny of all reservoirs is to be filled with sediments. If the sediment inflow is of large compared the reservoir capacity, the use full life of the reservoir may be very short. Reservoir planning must include consideration of the probable rate of sedimentation in order to determine whether the useful life of the proposed reservoir will be sufficient to warrant its construction.

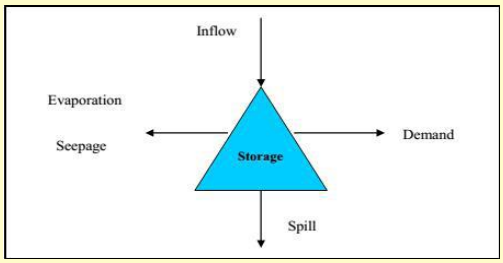
Reliable result sediment analysis can be evaluated using three methods.
· Semi -Empirical method
· Estimation of sediment from studied existing reservoirs
· Regional sediment yield map or curve

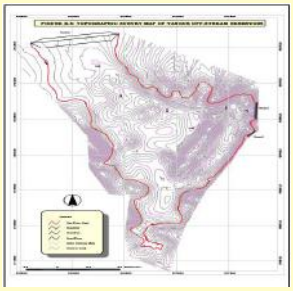
- Volume of Sediment expected if the catchment is untreated
- Sediment expected if the catchment is treated

From the above two cases, volume of sediment from treated catchment area is used for designing purpose. This is because, it is not economical to provide the Reservoir for accommodating sediment for untreated catchment. To make this reasonable and acceptable, the catchment should be treated with planting bushes, constructing terracing etc.

6. RESERVOIR PLANNING

This section presents, the reservoir sizing analyses of the proposed Yangus reservoir.





Top of Yangus Tributary at the Proposed Off-Stream Reservoir

7. GEOLOGY

The main objectives of this geological dam site investigation is to provide detailed and adequate information on: -

· The soundness of the foundation and abutments
· Evaluation of the existence of geological structures and its ultimate effect on the dam
· The various rock units occupied along the dam axis and surroundings.
· The overall catchments area regarding siltation problem
· The availability of construction materials and ultimately to produce geo logical map of the dam site

Geology is studied to analyze

- The safety of dam particularly on its foundation and abutments.
- The water tightness of the reservoir basin.
- The availability of natural material for its construction. YANGUS AREA GEOLOGY
- Situated in active zone of East African rift valley
- Subjected to various geological activities

Rocks at the dam site

* Granite →at the dam axis
* Gneisses, Slates, Schist→ cover large area of the dam axis
* Lime stone, Mudstone→ Found along the dam axis

8. Dam type selection

Whenever it is decided to construct a dam at a particular place, the first baffling problem which faces us is to choosing the kind of the dam. Which type will be the most suitable and economical? Two or three kinds of dams may be technically feasible, but only one of them will be the most economical. Various designs and their estimates have to be prepared before signaling one particular type.

Factors to select dam tape

- Topography
- Geology and foundation conditions
- Abutment condition
- Earth quake zone
- Availability of material
- cost

In this project since the topography shape is U-shaped it is suitable for concrete gravity dam.

Particularly, in this project the foundation is of solid rock foundation which consists of granite. Granite is found just at the downstream side of the dam axis in both stream bank sections and at the outlet two of the secondary storage reservoir. And gneiss rocks cover large areas of the dam axis and the surrounding areas, and are therefore termed regional metamorphic rocks .Therefore we decide for concrete gravity dam. Specific detail is presented in the geology report.

Our project study area is located in a highly tectonically disturbed zone and therefore, to avoid or minimize any situation of foundation instability and to resist earthquake shocks without danger concrete gravity dam is preferable.

In this project, as per the above conditions, the satisfactory dam type is the concrete gravity dam and in particular from the concrete dam, arch dam cannot be provided due to the abutment condition. In consideration of the fifth criteria, that is, availability of construction material, the project site is locally available of sand. And most significantly a cement factory is nearly located (almost 65km) which provides a large amount of cement. In addition the construction site

is located at a short distance from the main Asmara-Massawa road and hence is suitable for transportation of construction materials using any equipment.

A crusher, which is early established aimed to crush aggregates used for the renovation of Asmara-Massawa road, is there nearer to the site to facilitate crushing of aggregate. Crushed aggregates are preferable in RCC mixes due to the sharp interlocking edges of the particles, which help to reduce segregation, provide higher strengths, and better aggregate interlock at joints and cracks. So due to these conditions the typical dam type of our project will be RCC

Therefore since RCC dams are machine based projects unlike the other types of dams which are labor oriented, there is speed in construction and this correspondingly reduces the cost. Again lower cement content is needed in the mixing which reduce the cost of cement. Approximate costs of RCC range from 25 to 50% less than conventionally placed concrete. Based on the factors mentioned above we have decided, the most feasible type of dam is (ROLLED COMPACTED CONCRETE) DAM.

(ROLLED COMPACTED CONCRETE) DAM which is similar to the conventional concrete gravity dam but has a huge difference in construction methods and mixing condition.

8.1 GENERAL CONCEPT OF RCC GRAVITY DAM

RCC dam design is similar to a conventional gravity dam so that its own weight provides the major resistance to the forces exerted up on it. The structural analysis, eventually, should prove that the dam is safe against all the forces acting on it. These forces include internal and external ones or else restoring and overturning forces. The overturning forces are those forces which are responsible for the failure of the dam. These include the horizontal water thrust, uplift force due to seeping water and forces due to Earthquake, wind load, temperature stress, wave load and sedimentation load if any. Eventually the dam is to be checked against overturning, sliding, compression or crushing of material, foundation bearing capacity and shear failures at each joint line at the assumed interval.

PROPERTIES OF RCC

* placed quickly and easily
* Sections are built lift by lift

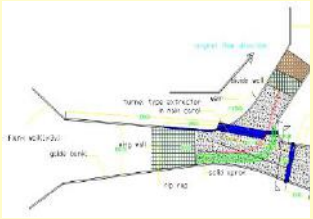
ADVANTAGES

* Cost
* Rapid construction
* Integral spillways and appurtenant structure
* Minimized diversion and coffer dam

9. Diversion structure

Diversion structure which may be a weir or a barrage that raises the water level of the river slightly. The main objective- Improving the existing diversion at Demas

Objective of the new diversion is *diverting water (27% of damas) to Yangus River and Exclude silt load*



Design result *diversion structure*

10. SPILLWAY DESIGN

Spilling floods safely from a reservoir to the tail-water of a dam is a key issue regarding dam safety. Stepped cascades are both spillways and energy dissipaters combining a number of advantages. On the one hand, the free surface flow on surface spillway chutes allows for a safe passage of water even under flood events larger than the design flood, i.e. for an overload scenario such as the safety check flood. On the other hand, a stepped chute can easily be incorporated into the dam body of concrete structures such as RCC dams, leading to economic savings due to relatively simple and fast construction both of new dams and for armoring of existing embankment dams. Moreover, the high amount of energy dissipation achieved along stepped spillways enables savings on the stilling basin, the length of which can be considerably reduced compared to those downstream from conventional smooth chutes. The energy dissipation is due to the step macro-roughness, leading to air entrainment and greatly reduced flow velocities and consequently limiting the cavitation risk. The aeration produces flow bulking, however, and therefore requires higher sidewalls.

11. OUTLET AND PIPE DESIGN

Outlet structures play a very significant as well as crucial role in operation of any type of dam projects. Their main and primary purpose is to draw water from the reservoir as and when needed, for whatever the purpose is. Another, but equally important use of outlet structures is that they can be used as service spillways in case of high flood occurrences. They can also act as a flood control regulator, to release water temporar-

ily stored in flood control storage space or to evacuate storage in anticipated of flood inflows. Furthermore, the outlets may serve to empty the reservoir, to permit inspection, to make needed repairs, or to maintain the upstream face of the dam or other structures normally in undated. They can be provided either through the body of the dam or adjacent to it through some hill side at one end of the dam. The layout, size, and shape of the outlet works are based on hydraulic and hydrology requirements, regulation plans, economics, site conditions, operation and maintenance needs, and interrelationship to the construction plan and other appurtenant structures.

Once raw water is retained at the reservoir, it should be properly treated before conveyance to the water user. Hence the Massawa water supply project will have water treatment component and main pipeline that delivers water to Forto Vittorio distribution reservoir. The old main pipeline which is 300 mm in diameter is old and cannot be recommended for this scheme. Hence, a new pipe line analysis and design is carried out for the new water supply project.

The new water supply project adopts a Gravity system of water distribution as there is sufficient head available for the intended purpose.

The conveyance to the irrigation area is some 20 km from the dam. Taking into account that the area is hot climatic it will be more advisable to use pipe conveyance rather than canal conveyance.

12. The Purpose Environmental Impacts assessment

- ✓ To ensure environmentally sound and sustainable project.
- ✓ To evaluates positive and negative impacts and provides mitigation measures where applicable.
- ✓ To address the possible impacts associated with the construction of a reservoir.

Environmental Impacts at vicinity of the reservoir

- ✓ Air quality and noise
- ✓ Ecology
- ✓ Health and Safety
- ✓ Aesthetics
- ✓ Land Use
- ✓ Socio Economic

Conclusion

The environmental impact and social impact analyses indicate that most of the environmental impact arising from the implementation of the preferred alternatives are positive. The project will be environmentally beneficial to the villagers and the surrounding areas.

- ✓ Developing and upgrading the infrastructure system
- ✓ Incising the production rate of the agricultural area by irrigation it twice a year in addition the rainy season.
- ✓ Helping villagers to enhance socio economic environmental condition
- ✓ Providing a critical condition to reducing health risks from infectious disease by providing adequate quality water for consumption and sanitation.

The main unavoidable negative impact will be arising from the inundation of presently irrigable land and permanent land acquisition, which will result in a change of land use and some irreversible land and soil losses.

Software used

- Microsoft office
- Eagle Point
- AutoCAD
- ArcGIS

Challenges

- As there were no funds for this proposal the site visits arranged were not enough
- Enough senior consultants didn't participate.
- Limitation of data
- Lack of tutorial for using the software and design itself.
- Not enough software was available.

REFERENCES

- Design of diversion weirs small scale irrigation hot climates (rozgar baban)
- FAO Irrigation and Drainage Paper No. 56 Crop Evapotranspiration
- AASHTO LRFD Bridge design speciation's First Edition SI Unit 1994 & 2012
- **NRCE, 1996**. Easter Plains Water Resources and Agriculture Development Potential, Asmara, Eritrea, 1996.
- **GEDECC, 2005**. Naro Irrigated Agriculture Project, Asmara, Eritrea, 2005.
- **Dawit, B.H., 2008**. Surfacewater Resources Assessment of Upper Mereb River Catchment, unpublished, Asmara, Eritrea, 2008.
- Other miscellaneous materials from internet and Google.

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PROPER ACADEMIC REFERENCING

ብሰናይ ክፍሉ

ዝኾነ ሰብ፡ ኣብ ሓደ ዘዳለዎ ጽሑፋዊ ስራሕ፡ ካልኦት ሰባት ኣቐዲሞም ዝሰርሕዎ ጽሑፍን ካልእ ዓይነት ኣበርክቶን ኣብ ጽሑፉ ምስ ዝጥቀም፡ ነቲ ካብ ካልኦት ሰባት ዝተወከሶ ነገራት፡ ምንጪ ካበይ ከም ዝኾነ ብንጹር ኣገባብ ንኣንበብቲ ከመልክት ይግደድ እዩ። እዚ መስርሕ'ዚ ድማ፡ ውከሳ (referencing) ተባሂሉ ይፍለጥ። ኣብዚ ዘለናዮ ምዕቡል ዘመን፡ ውከሳ ሓደ ካብ ቀንዲ ባእታት ኣካደምያዊ ባህሊ እዩ። ሓደ ካብ ወሰንቲ መምዘኒ ኣካደምያዊ ጽሑፋት፡ እቲ ጸሓፊ ንካብ ካልእ ምንጭታት ዝረኸቦ ሓበሬታ፡ ማዕረ ክንደይ ብግቡእን ብጽፉፍነትን ከም ዝተወከሶ እዩ። መሰረት ውከሳ፡ ብቀንዱ ከምቲ ኣብ ባህልና'ውን ዘሎ ' ንዝገበረልካ - ወይ ግበረሉ ወይ ንገረሉ' ዝብል ሞራላዊ ግዴታ ዘሰክም ሓላፍነት ውከሳ ዝምንጪ እዩ። ብዓቢኡ'ውን፡ ዝኾነ ናይ መሰል ደራሲ ወይ መሰል ስነ-ኣእምሮኣዊ ንብረት ዘለዎ ጽሑፍ፡ ብዘይ ፍቓድ ጸሓፊኡ ከም ናትካ ኣምሲልካ ኣብ ጽሑፍካ ምቕራብ፡ ብዓይኒ ሕጊ ከም ግህሰት መሰል ደራሲ ተራእዩ፡ ናይ ቅስጠት ገበን (plagiarism) ተባሂሉ ገበናዊ ተሓታትነት ዘስዕብ እዩ። ሎሚ፡ ናይ ቅስጠት ተግባራት ኣብ ኣከደምያዊ ዓለም ከም ገበንን ሞራላዊ ግህሰት ስለ ዝርኣ፡ ዝኾነ ኣካደምያዊ ጽሑፍ ዘዳሉ ሰብ፡ ኣብ ጽሑፉ ብኩሉ ቅቡል ዝኾነ እሩም ኣካደምያዊ ውከሳ ክርኢ ይሕተት እዩ። ብተወሳኺ'ውን ዝተፈላለያ ዩኒቨርሲታት፡ ኮለጃትን ኣካደምያውን ካልእ ጽሑፋትን ዘሕትማ ጆርናላትን ጋዜጣታትን፡ ዝኾነ ኣብኣተን ጽሑፍ ከሕትም ዝደሊ ሰብ ክኽተሎ ዘለዎ ብናተን ዝኾነ ቅዲ፡ ናይ ውከሳ ሕግታት የውጽኣ እየን።

ብዙሓት ሰባት፡ ብፍላይ ድማ ኣብ ዓንኬል ካልኣይ ደረጃን ናይ ኮለጅ ትምህርትን ዝርከቡ ተምሃሮ፡ ኣብ ዝገብርዎ ምርምርን ዝሰርሕዎ ዕዮ ገዛታትን፡ ብሰንኪ ግቡእ ኣፍልጦን ኣጠቓቕማን እሩም ኣካደምያዊ ውከሳ፡ ብዙሕ ዘሰክፍ ጌጋታት ክፍጽሙ ይረኣዩ እዮም። ስለዚ እምበኣር እዛ ዓንቐጽ፡ ነዚ መሰረታዊ ሽግር ንምግታእ፡ ንኩሎም ተምሃሮ፡ ደረስቲ፡ ጸሓፍቲ፡ ተርጎምቲን ካልኦት ኣካደምያዊ ጽሑፋት ዘበርክቱ ሰባት፡ መባእታውያን ዝኾኑ ሕጋጋት ኣከደማያዊ ውከሳ ሒዛ ቀሪባ ኣላ - ሰናይ ምክትታል!

1 መዓስ ውከሳ ንጥቀም፧

እታ ቀዳመይትን ዓባይን ሕጊ ውከሳ፡ ዝኾነ ጽሑፍ/ሓሳብ ዘይናትካ ምስ ዝኸውን፡ ወትሩ ጥቐሶ! ትብል ኢያ። ነዚ ተኸቲልና ድማ፡

- እቲ ንውከሶ ዘሎና ጽሑፍ ብቀጥታ ከም ዘለዎ ካብ መጽሓፍ ዝተወስደ ምስ ዝኸውን፡ ነቲ ጽሑፍ ኣብ ድርብ ምልክት ጥቐሲ "...." ብምእታው ኢና ነመልክቶ።

> The Federal Government intends to 'restrict access to judicial review in visa-related matters to all but exceptional circumstances'.[3]

- እቲ ንውከሶ ዘሎና ነቲ ባዕልና ክንብሎ ደሊና ዘለና ዝሕግዝ ወይ ዘብርህ ምስ ዝኸውን፡ ብናትና ሓሳብ ኣርዒምና ክንጽሕፎ (parpharse) ንኽእል ኢና። ኣብዚ ዝኾነ ምልክት ኣየድልን እዩ!

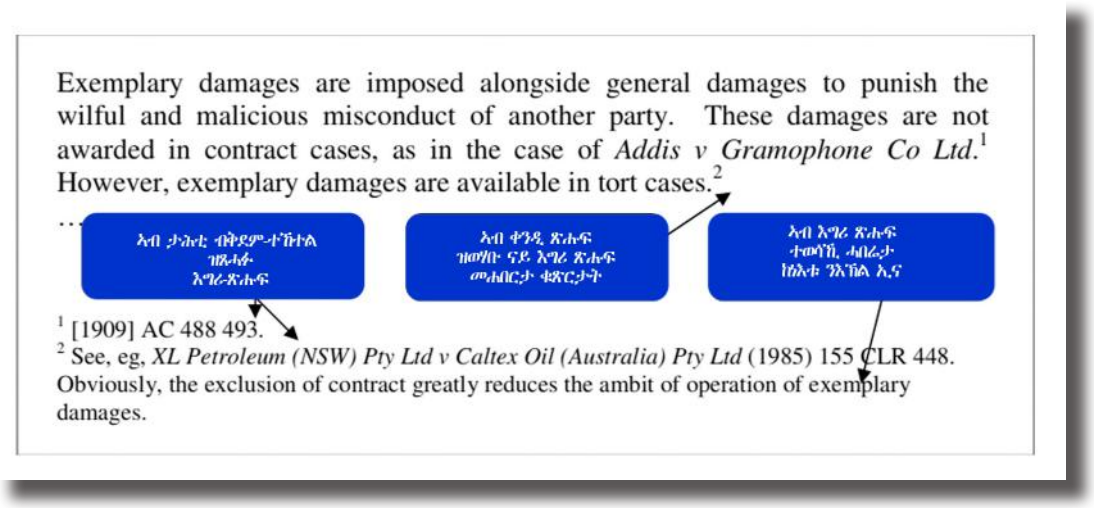
- እቲ ንውከሶ ዘሎና ብዝሕ ዝበለ (ኣብ ገሊኡ ናይ ውከሳ መምርሒታት ልዕሊ 5 መስመር እዩ ዝብል) ምስ ዝኸውን፡ ምልክታ ጥቐሲ ከይገበርና ካብቲ ናትካ ሕጡብ ጽሑፍ ፈሊኻ ከም ዘለዎ ክንቐድሖ ንኽእል ኢና።

> His Honour said:
>
> > In this respect it should be emphasised that the directors of a company must take account of the interest of its shareholders and its creditors. Any failure by the directors to take into account the interests of creditors will have adverse consequences for the company.[4]

በዘን ሰለስተ ኣገባባታት ጌርና ውከሳ ምስ ተጠቐምና፡ ኣብ መወዳእታ ክፋል ናይ ጽሑፍና፡ እግረ ጽሑፍ ነእቱ።

2 ብከመይ ውከሳ ንጥቀም፤ እግረ ጽሑፍ (Foot note)

ኣብ እነዳልዎ ጽሑፍ፡ ነፍስወከፍ ውከሳ ኣብቲ ቀንዲ ሕጡብ-ጽሑፍ ብቅደም ተኸተል ዝስራዕ ቁጽሪ ብምሃብ፡ ኣብ እግሪ ናይቲ ጽሑፍ ድማ ናይቲ ውከሳ ሓበሬታ ንህብ። እዚ ብቅደም ተኸተል ዝስራዕ ቁጽሪ፡ ብኮምፕዩተር ኣብ ዝጸሓፉሉ እዋን፡ ከም Microsoft Word ዝኣመሰሉ ሶፍትዌራት ንውከሳ ዝኸውን ብቐዕ ኣገባብ ኣለዎም።



3 መሰረታውያን ናይ ኣጸሓሕፋ ሕጋታት ውከሳ

- መጽሓፍቲ (Books) /ዓናቐጽ (Articles) / ጸብጻባት (report)

እቲ ንውከሶ ሓሳብ፡ ካብ መጽሓፍ ዝተወስደ ምስ ዝኸውን፡ እዚ ዝስዕብ ኣጸሓሕፋ ተኸቲልና ኣብ እግሪ ጽሑፍ ነመልክቶ።

[*] (ቁጽሪ እግረ ጽሑፍ) ምሉእ ስም ደራሲ, ኣርእስቲ መጽሓፍ (ናይ ሕታም ቁጽሪ፣ ዝተሓትመትሉ ዓመት) (ንወከሰሉ ዘለና ገጽ)

ንኣብነት

[24] P L Karcher, *International Law Cases* (2nd ed, 1999) 23.

[25] Peter Birks (ed), *Wrongs and Remedies in the Twenty-First Century* (1996) 93.

መዘኻኸሪ፥

- ኣርእስቲ መጽሓፍ፡ ኩሉ ሳዕ ቅንን ኢሉ (italicized) ክጸሓፍ ኣለዎ

- እቲ ንጠቐሶ ሰብ ኣብ ክንዲ ደራሳይ፡ ናይታ መጽሓፍ ኣርታዓይ (editor) ወይ ተርጓማይ (translator) እንተኾይኑ ድሕሪ ስሙ ንኣበርክትኡ ብኣሕጽሮተ ቃል ነመልክቶ (ካልኣይቲ ኣብነት ተመልከት!)

- እቲ መጽሓፍ፡ ቀዳማይ ሕታም እንተኾይኑ፡ ቀዳማይ ምኻኑ ምሕባር ኣየድልን እዩ።

እቲ ንውከሶ ሓሳብ፡ ካብ ኣካደምያዊ ጆርናል ዝተወስደ ዓንቐጽ ምስ ዝኸውን፡ እዚ ዝስዕብ ኣገባብ ንኽተል

[*] (ቁጽሪ እግረ ጽሑፍ) ምሉእ ስም ደራሲ, ኣርእስቲ ዓንቀጽ (ዓመት) ቁጽሪ ቅጺ ኣርእስቲ ናይ ጆርናል እታ ዓንቀጽ እትጅምረሉ ገጽ, ንወከሰሉ ዘለና ገጽ

[21]Friedrich Juenger, 'Tort Choice of Law in a Federal System' (1997) 19 *Sydney Law Review* 529, 540.

[22]A S Lynton, B Green and L S Myalls, 'Contemporary Issues in Tort Liability' (1998) 43 *Current Legal Problems* 320, 323.

መዘኻኸሪ

- ስም ናይታ ዓንቀጽ ኩሉ ግዜ ኣብ ውሽጢ ንጽል ናይ ጥቕሲ ምልክት ክኣቱ ኣለዎ

- ኣርእስቲ ናይቲ ጆርናል ኩሉ ግዜ ቅንን ኢሉ (italicized) **ክጸሓፍ ኣለዎ**

- እታ ጆርናል እትጅምረሉ ገጽ ካብቲ ንወከሰሉ ዘለና ገጽ ናይቲ ጆርናል ምእንቲ ክፍለ፡ ኣብ መንጎ ናይ መፈላለዩ ምልክታ (,) ወይ ኮማ (commma) **ምእታው ኣይነረስዕ! እዚ ዝተገብረሉ ምኽንያት፡ ኣብ ሓደ ጆርናል መብዛሕትኡ ግዜ ብዙሓት ዓናቐጽ ስለ ዝሕተማ፡ እታ ልክዕ ዝደለናያ ምንጪ ብንጹር ፈሊኻ ንምሕባር ዝዓለመ እዩ።**

- **ናይ ኢንተርነት ምንጭታት**

እቲ ንውከሶ ሓሳብ፡ ካብ ናይ ኢንተርነት ምንጭታት ዝተወስደ ምስ ዝኾነ፡ እዚ ዝስዕብ ኣጸሓሕፋ ተኸቲሉና ኣብ እግሪ ጽሑፍ ነመልክቶ።

*(ቁጽሪ እግረ ጽሑፍ)	ምሉእ ስም ደራሲ,	ኣርእስቲ ዓንቀጽ,
(ዓመት)	ስም ዌብ ሳይት	
<URL> at	ነቲ ዌብ ሳይት ዝተወከሰናሉ ዕለት	

ንኣብነት

[39] Jason Lau, *International Law and Human Rights,* (2001) Centre for Law Research <http://www.clr.edu.au/pubs/InternatLaw.html> at 11 January 2003.

መዘኻኸሪ

- ስም ናይቲ ዓንቀጽ ኩሉ ግዜ ቅንን ኢሉ (italicized) **ክጸሓፍ ኣለዎ**

- URL **ማለት ናይቲ ዌብሳይት ኣብ** WWW **ዘለዎ ናይ ኢንተርነት ኣድራሻ ማለት እዩ። ኣብ ዝኾነ ዌብ ሳይት፡ ነቲ** URL **ኣብቲ ናይ መድለይ ቦታ** (search bar) **ክንረኽቦ ንኽእል ኢና።**

- ጽሑፍና ብ Microsoft Word **ዝተዳለወ ምስ ዝኾነ፡ እቲ ሶፍትዌር ባዕሉ ነቲ ንጽሕፎ ናይ** URL **ኣድራሻ ስለ ዝርድኡ፡ ኣስሚሩ ሰመያዊ ሕብሪ ድሕሪ ምሃብ፡ ናብ** Link **ከም ዝቕየር ይገብሮም። እዚ ድማ፡ እታ ኮምፑተር ምስ ኢንተርነት ዝተራኸበት ምስ ትኾነ፡ ኣብ ክንዲ ከም ብሓድሽ ነቲ ኣድራሻ ጽሒፍካ ኣእቲኻ ናብቲ ዌብ ሳይት ትከይድ፡ እቲ** Link **ከም መቀላጠፊ ኮይኑ፡ ካብ** Microsoft Word **ናብቲ ዌብ ሳይት ብቕጥታ የስግረካ። ስለዚ፡ ናይ** URL **ኣድራሻ ብዝግባእ ምጽሓፍ ኣገዳሲ ኮይኑ፡ ዝኾነ ጌጋ እንተጌርካ፡ ንኣንበብትኻ ጌጋ ሓበሬታ ትህቦም ከም ዘለኻ ተረዳእ!**

- **ኣህጉራውያን ውዕላት** (INTERNATIONAL TREATIES AND CONVENTIONS)

እቲ ንውከሶ ሓሳብ፡ ንኣህጉራውያን ውዕላት ዝተወስደ ምስ ዝኾነ፡ እዚ ዝስዕብ ኣጸሓሕፋ ተኸቲሉና ኣብ እግሪ ጽሑፍ ነመልክቶ።

*(ቁጽሪ እግረ ጽሑፍ)	ምሉእ ስም ኣህጉራዊ ውዕል,	ዕለት
ቁጽሪ ናይቲ ኣህጉራዊ ውዕል		ንወከሰሉ ዘለና ዓንቀጽ
እቲ ውዕል ኣብ ተግባር ክውዕል ዝጀመረሉ ዕለት		

ንኣብነት

[36] *The Antarctic Treaty*, opened for signature 1 December 1959, 402 UNTS 71, art 7(2) (entered into force 23 June 1961).

[37] United Nations Convention on the Law of the Sea, opened for signature 10 December 1982, 1833 UNTS 3 (entered into force 16 November 1994).

መዘኻኸሪ

- ኣህጉራዊ ውዕል ማለት ሃገራትን ኣህጉራውያን ውድባት ዝፍርምኡ ውዕል ማለት እዩ

- ስም ናይቲ ትውከሶ ዘለኻ ኣህጉራዊ ውዕል ኩሉ ግዜ ቅንን ኢሉ (italicized) **ክጸሓፍ ኣለዎ**

- ኣህጉራውያን ውዕላት መብዛሕትኡ ግዜ ኣብ ውድብ ሕቡራት ሃገራት ስለ ዝምደብ፡ ው.ሕ.ሃ ዝህቦም ቁጽሪ፡ Treaties Series Citation **ተባሂሉ ይፍለጥ**

- ሓደ ኣህጉራዊ ውዕል ኣብ ተግባር ምእንቲ ክውዕል፡ እንተወሓደ ክንድዚ ዝቐጽረን ሃገራት ክፍርማሉ ኣለዎ ተባሂሉ እዩ ዝግደፍ። እቲ ዝድለ ዝወሓደ ቁጽሪ ናይ ዝፍርማ ሃገራት (the required minmum number of signing states) **ምስ ተረኽበ፡ ነቲ ውዕል ብወግዒ ኣብ ተግባር ውዒሉ** (entred into force) **ይበሃል። እቲ ውዕል ግን ነተን ዝፈረማሉ ሃግራት ጥራይ ከም ዝገዝእ ኣይንረስዕ!**

- **ናይ ጋዜጣ ጽሑፋት**

እቲ ንውከሶ ሓሳብ፡ ንኣህጉራውያን ውዕላት ዝተወስደ ምስ ዝኾነ፡ እዚ ዝስዕብ ኣጸሓሕፋ ተኽቲልና ኣብ እግሪ ጽሑፍ ነመልክቶ።

* (ቁጽሪ እግረ ጽሑፍ),	ምሉእ ስም ደራሲ,	'ኣርእስቲ ዓንቀጽ',	
ስም ጋዜጣ (ጋዜጣ እትሕተመሉ ቦታ),	ዕለት,	ንወከሰሉ ዘለና ገጽ	

ንኣብነት

[40] Ellen Connolly, 'Strapped for Cash: Man Gets $2.5m for a 1984 Caning', *Sydney Morning Herald* (Sydney), 15 February 2001, 1.

[2] **በርሀ ፍስሃጽዮን፡ 'ኣመሪካ ድሕሪ ኦባማ'፡ ሓዳስ ኤርትራ (ኣስመራ)፣ 12 ጥሪ 2017፡ 3**

4 ኣብ ሓደ እግሪ ጽሑፍ ብዙሓት ውከሳታት ምስ ዝህልው እንታይ ንገብር፧

ንሓደ ኣብ ጽሑፍካ ክትብሎ ዝደለኻ ሓሳብ፡ ካብ ክልተ ወይ ንላዕሊ ውከሳታት ክትጠቕሰሉ ትኽእል ኢኻ። ነዚ ንምግባር ድማ ኣብቲ እግረ ጽሑፍ ናይ እንግሊዘኛ ናይ ሰሚ ኮለን ምልክት (semi colon) **ማለት (;) ተጠቒምካ እንዳፈላለኻ ክትዝርዝሮም ትኽእል። (ኣብ ኣብነት እቲ መፈላለዩ ምልክት ብሰማያዊ ሕብሪ ተመልኪቱ ኣሎ!)**

ንኣብነት

[10] P L Karcher, *International Law Cases* (2nd ed, 1999) 23; Jason Lau, *International Law and Human Rights,* (2001) Centre for Law Research <http://www.clr.edu.au/pubs/InternatLaw.html> at 11 January 2003; Ellen Connolly, 'Strapped for Cash: Man Gets $2.5m for a 1984 Caning', *SydneyMorning Herald* (Sydney), 15 February 2001, 1.

5 ኣብ ሓደ ውከሳ ብዙሓት ደረስቲ ምስ ዝኾነ እንታይ ንገብር፧

ከምቲ ኣቐዲሙ ዝተባህለ፡ መሰረታዊ ሕጊ ውከሳ፡ ነቲ እትውከሶ ዘለኻ ምንጪ ስሙ ክትጠቕሶ የግድድ እዩ። ኣብዚ ክዝከር ዘለዎ፡ ኣብ ቀንዲ ትሕዝቶ ጽሑፍካ፡ እቲ ትውከሶ ዘለኻ ሰብ፡ ዝኾነ ማዕርግ እንተሃልይዎ ከተእትዎ ትኽእል ኢኻ። ንኣብነት፡ ኣቶ፡ ወይዘሮ፡ ፕረሲደንት፡ ዶክተር፡ ፕሮፌሰር፡ ሰር፡ ቐሺ፡ ሸኽን ካልእ ተመሳሳልቲ ማዕርጋት ማለት እዩ። ኣብ እግረ-ጽሑፍ ግን ከምቲ ኣብ ቁጽሪ ሰለስተ ተጠቒሱ ዘሎ፡ ቀንዲ ስም ናይቲ ደራሲ ጥራይ እዩ ዘገድስ።

ምስ ውከሳ ዝተሓሓዝ ካልእ ነገር ድማ ቁጽሪ ትወከሶም ዘለኻ ደረስቲ እዩ። እቲ ደራሲ ሓደ ምስ ዝኾነ፡ ጸገም ዝፈጥር ኣይኮነን። ናይ ሓደ ውከሳ ደረስቲ፡ ብዙሓት ሰባት ምስ ዝኾኑ ግን ብፍሉይ ሕግታት ተወኪስካ ክተጠቕሶ ኣለካ። እቶም እትውከሶም ዘለኻ ደረስቲ፡ ብዝሓም ክልተ ወይ ሰለስተ ምስ ዝኾኑ፡ ናይ ኩላቶም ስም ክትዝርዝሮ ትግደድ ኢኻ። ነቶም ናይ መወዳእታ ክልተ ኣስማት ከኣ 'and' ዝብል መፈላለዩ ትገብረሎም። ኣስተውዕል፡ '&' ዝብል ምልክት ተቐባልነት የብሉን!

Charles Sampford, Rodney Smith and A J Brown believe corruption can be reduced by the institutionalisation of integrity.[5]

…

[5] Charles Sampford, Rodney Smith and A J Brown, 'From Greek Temple to Bird's Nest' (2005) 64 *Australian Journal of Public Administration* 96, 96.

እቶም ደረስቲ፡ ብዝሐም ኣርባዕተን ካብ ኣርባዕተ ዝበዝሑ ምስ ዝኾኑ ግን፡ ኣብቲ እግረ ጽሑፍ ናይቲ ቀዳማይ ደራሲ ጥራይ ጠቒስካ፡ ነቶም ዝተረፉ 'et al' ብዝብል ናይ ኢንግሊዘኛ ቃል ትውክሎም። 'et al' ዝብል ቃል 'and others' ማለት ኮይኑ፡ ብትግርኛ 'ካልኦትን' ይትርጎም።

Dr Richard Kreindler et al argue that as cross-border transactions become more common, purchase price adjustments will become more complex and difficult to resolve.[6]

…

[6] Richard Kreindler et al, 'Cross-Border Purchase Price Adjustment Provisions' (2005) 8 *The Journal of Private Equity* 82, 83.

6 ንሓደ ውክሳ ብተደጋጋሚ ኣብ ጽሑፍ ንኽንጥቕመሉ እንታይ ንገብር፧

ንሓደ ኣብ ጽሑፍካ ኣቕዲምካ ብዝግባእ ጠቒስካዮ ዝነበርካ ውክሳ፡ ካልኣይ ግዜ ወይ ውን ልዕሊኡ ደጊምካ ክትወክሶ ምስ እትደሊ፡ ናይ ግድን ከምቲ ናይ ቕዳማይ ግዜ ብግቡእ ምዝርዛሩ ኣየድልየካን እዩ። ኣይቢድ (ibid) ወይ'ውን ላዕሊ/ታሕቲ (above/below) ብዝብሉ ኣገባባት እንዳተጠቕምካ፡ ደጋጊምካ ክትጠቕሶም ትኽእል ኢኻ።

ኣይቢድ (Ibid)

ኣይቢድ፡ 'ኣይቢደም' ካብ ዝብል ናይ ላቲን ቃል ዝመጸ ኮይኑ፡ ቃል ብቃሉ 'ኣብ ተመሳሳሊ ቦታ' ይትርጎም። ኣብ እዞም ዝስዕቡ ኣጋጣሚታት ድማ ንጥቀመሉ፡

- እቲ ዝጥቐስ ሓሳብ፡ ልክዕ ከምታ ናይታ ልዕሊኣ ዘላ እግሪ ጽሑፍ፡ ካብ ተመሳሳሊ ምንጪ እንተደኣ ኮይኑ፡ ኣብታ ዳሕረወይቲ እግሪ ጽሑፍ ኣይቢድ ንጥቀም።

[8] Michael Coper and George Williams (eds) *Power, Parliament and the People* (1997) 91.
[9] Ibid.

* ኣብዛ ኣብነት፡ እግረ ጽሑፍ ቁጽሪ ሸሞንተ፡ ብዝግባእ ተወኪሳ ኣላ። ብመሰረት ሓበሬታኣ ድማ፡ እቲ ሓሳባት፡ ካብዛ ተጠቒሳ ዘላ መጽሓፍ ኣብ ገጽ 91 ይርከብ። እቲ ጸሓፋይ ደጊሙ፡ ንእግረ ጽሑፍ ትሸዓተ፡ ኣይቢድ ምጥቃሙ፡ ነቲ ኣንባቢይ እቲ ሓሳብ ናይ ቁጽሪ ትሸዓተ ሓሳብ፡ ከምታ ናይ እግረ ጽሑፍ ቁጽሪ ሸሞንተ ተመሳሳሊ ስለ ዝኾነ፡ ደጊሙ ኣብ ገጽ 91 ንናይታ ዝተጠቕሰት መጽሓፍ ክወክስ እዩ ዝሕብሮ ዘሎ።

- እቲ ዝጥቀስ ሓሳብ፡ ልክዕ ከምታ ናይታ ልዕሊኣ ዘላ እግሪ ጽሑፍ፡ ካብ ተመሳሳሊ ምንጪ ከሎ፡ ግን ካብ ዝተፈልየ ገጽ (different page number) እንተደኣ ኮይኑ፡ ኣብታ ዳሕረወይቲ እግሪ ጽሑፍ ኣይቢድ ምስ እታ ዝተፈልየት ቁጽሪ ገጽ ንጥቀም።

[10] Matthew Collins, 'Democratic Issues' (1983) 3 *American Politics* 245.
[11] Ibid 246.

* ኣብዚ ኣብነት፡ እግሪ ጽሑፍ ዓሰርተ ሓደ፡ ልክዕ ከም እግረ-ጽሑፍ ዓሰርት፡ ካብ ሓደ ምንጪ ዝወጽኣ እየን። እንተኾነ ግን እግሪ ጽሑፍ ዓሰርተ ሓደ፡ ኣብ ካልእ ገጽ ናይቲ ምንጪ ስለ እትርከብ፡ ኣይቢድ ምስ እታ ፍልይቲ ናታ ቁጽሪ ገጽ ጌርካ ትጽሓፍ። እቲ ኣንባባይ ከኣ ኣብታ ተጠቒሳ ዘላ መጽሓፍ፡ በታ ዝተባህለት ቁጽሪ ገጽ ርእዩ ይረኽባ ማለት እዩ።

ላዕሊ/ታሕቲ (above note / below note)

- እቲ ዝጥቐስ ሓሳብ፡ ብጀካ ናይታ ብቐጥታ ልዕሊኣ ዘላ እግሪ ጽሑፍ (ሕጊ ኣይቢድ ተመልከት) ገዲፍካ፡ ኣብ ዝኾነ ካልእ ክፋል ናይቲ ጽሑፍ ተጠቒሱ እንተደሃልዩ፡ ላዕሊ/ታሕቲ ንጥቀም።

> [12] Olaf Sanders, *An Explanation of Political Theory* (1972) 32.
> [13] International Narcotics Control Board, *Annual Report 1999* (1999) [176].
> [14] Sanders, above n 12, 37.

* እግረ ጽሑፍ ዓሰርተ ክልተ ብዝግባእ ተጠቒሳ ኣላ። እግረ ጽሑፍ ዓሰርተ ሰለስተ ካልእ ውክሳ እያ (ንዘክር፡ እግረ ጽሑፍ ዓሰርተ ሰለስተ፡ ምስታ ልዕሊኣ ዘላ እግረ ጽሑፍ ተመሳሳሊት እንተትነብር፡ ሕጊ ኣይቢድ ምተጠቐምና ነይርና)። እግረ ጽሑፍ ዓሰርተ ኣርባዕተ፡ ምስ እግረ ጽሑፍ ዓሰርተ ክልተ ተመሳሳሊት ስለ ዝኾነት፡ እቲ ምንጪ ልዒሉ ኣብ እግረ ጽሑፍ ቁጽሪ ዓሰርተ ክልተ ተመልኪቱ ከም ዘሎ ዝገልጽ 'above n 12' ዝብል መሐበርታ ይኣትዎ። 'ኮማ' ጌርካ ድሕሪ ምፍላይ ከኣ፡ እቲ ኣብ እግረ ጽሑፍ ዓሰርተ ኣርባዕተ ክውከስ ተደልዩ ዘሎ ቁጽሪ ገጽ ይጸሓፎ።

- መብዛሕትኡ ግዜ፡ ኣጠቓቕማ 'below' ካብ ናይ 'above' ዝተፈልየ እዩ። ጥቕሚ 'below' እቲ ጸሓፋይ፡ ንካልኦት ምንጭታት ዘይኮነስ፡ ንናይ ገዛእ ርእሱ ስራሕ ብውክሳ ዘመልክቱሉ ኣገባብ እዩ። እቲ ቀንዲ ዝጥቐስ ሓሳብ ኣብ ታሕቲ ኮይኑ፡ ኣብ ጽሑፍካ ብዛዕባኡ ኣቐዲምካ ከም መእተዊ ምስ እትጠቕሶ፡ ኑቲ ኣቐዲምካ እትጠቕሶ ዘለኻ፡ ቀንዲ ምንጪ ኣብ ታሕቲ ከም ዘሎ ዝሕብር፡ 'below n' ዝብል መሐበርታ ትጥቐም።

ንኣብነት

> ቴክኖሎጂንባህልን ዘሎዎም ዝምድና ብሰፊሑ ድሒሩ ዝጥቐስ እኳ እንተኾነ[4] ፡ ኣብ መንነኡም ዘሎ ሓያል ተጸላላዊ ዝምድና ምግማቱ ዘጸግም ኣይኮነን.....
>
> [4] Chapter 4,Technology and Culture, below, 100-134

* ኣብዚ ኣብነት እቲ ቀንዲ ብዛዕባ ቴክኖሎጅን ባህልን ዝገልጽ ኣርእስቲ ኣብ ምዕራፍ ኣርባዕተ ናይቲ ጽሑድ ዝርከብ እኳ እንተኾነ፡ እቲ ጸሓፋይ ኣቐዲሙ እንተጠቒስዎ፡ 'below' ተጠቒሙ ዝርከቦ ምዕራፍን ገጽን ንኣንባባይ ክሕብሮም ይኽእል።

- ብፍሉይ ምኽንያት ድማ፡ እቲ ዝጥቐስ ሓሳብ፡ ልክዕ ከምታ ናይታ ልዕሊኣ ዘላ እግሪ ጽሑፍ፡ ካብ ተመሳሳሊ ምንጪ ኮይኑ ከብቕዕ፡ እቲ ቀዳማይ እግሪ ጽሑፍ ካልእ ተወሳኺ ውክሳ ምስ ዝህልዎ፡ ንኣንባባይ ካብ ምድንጋር ንምድሓን ላዕሊ/ታሕቲ ትጥቐም።

> [15] Matthew Collins, 'Democratic Issues' (1983) 3 *American Politics* 245; Victor Thuronyi (ed), *Tax Law Design and Drafting* (1998) vol 2, 495.
> [16] Thuronyi, above n 15, 496.

* ኣብዚ ኣብነት፡ ብመሰረት ሕጊ ኣይቢድ፡ እግረ ጽሑፍ ዓሰርተ ሸዱሸተ ብቐጥታ ትሕቲ እግረ ጽሑፍ ዓሰርተ ሓሙሽተ ስለ እትርከብ፡ ኣይቢድ ተጠቂምካ ክትምልከት ዝግባእ እኳ እንተነበረ፡ እግረ ጽሑፍ ዓሰርተ ሓሙሽተ ግን ክልተ ውክሳታት ስለ ዝሓቖፈት፡ እግረ ጽሑፍ ዓሰርተ ሸዱሸተ ኣይቢድ ኢልካ እንተተወኪስካያ፡ ንኣንባባይ ካብተን ክልተ ላዕለዎት ነየንይተን ከም ዝኾንካ ምርዳእ ከሸግሮ እዩ። ስለዚ፡ ብፍሉይ ምኽንያት፡ ኣብ ክንዲ ኣይቢድ፡ 'above' ምስ ቁጽሪ ገጽ ተጠቒምካ ተምልክታ።

ክቡራት ኣንበብቲ፡ ኣብ ዝመጽእ ሕታም፡ ምስዚ ኣርእስቲ ዝተሓሓዝ 'Bibliography' ብከመይ ትጽሕፍን፡ ውክሳ ኣብ ናይ ትግርኛ ጽሑፍ ብከመይ ትገብርን ዝብሉ ኣርእስታት ሒዝና ክንቀርብ ኢና። ክሳዕ ሽዑ፡ ዝኾነ ሕቶ እንተሃልዩ፡
ብመገዲ facebook/ eritrean scientific group ወይ ድማ

ብመገዲ eriscigroup@gmail.com ክትጽሕፉልና ትኽእሉ ኢኹም።

• ኩለን እዘን ኣብዛ ጽሕፍቲ ዘለዋ ናይ እንግሊዘኛ ኣብነታት፡ ካብ 'WRITING AN REFERNCING LAW ASSIGNMENTS' ዝብል ናይ AIC LSU Student Resources' ዝተወሰደ እዩ።