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BLENDING OF TRADITIONAL AND MODERN TECHNOLOGIES THROUGH SCIENCE

Berhanu Gizaw

Abstract: While the developed world benefits from the modern explosion in technology, countries such as Ethiopia are still reliant on the methods of their forefathers for essential every day tasks like farming, cooking and provision of clean water. These tasks are often physically demanding, very costly in terms of time and energy, and, in many such societies, are often carried out by female members of the family. Additionally, they may cause damage to the local ecology and environment such as the deforestation and soil erosion arising from the use of trees for firewood. Western technologies are of little or no use in these environments as they are often too complex, too costly, inappropriate and difficult to maintain in developing societies.

INTRODUCTION

Due to lack of conducive environment for advancement, there is lack of fertile ground for increasing efficiency through competition and technology diffusion. Hence, in remote villages of Ethiopia, the forest continues to be logged, resources begin to deplete, there is poverty and hunger, people begin to migrate to bigger cities, communities disintegrate, culture is lost and language becomes extinct. Despite the significance of technologies in changing the livelihoods of diverse ethnic communities, these people increasingly find themselves exposed to sickness, economic shock, crop failure, unemployment and natural disaster. Since they are nature dependent, their economy is stagnant, the way of life and the environment upon which they depend and poorly understand betrays them, they struggle to make ends meet in a world that increasingly sees their way of life as “backward” and “irrational”. Yet these communities have proven themselves to be quite resilient and have adapted in the face of change, although swayed and constrained by the world around them. There is an urgent need to bring diverse alternatives together, from a variety of disciplines and backgrounds, to build mutual understanding about the realities of craftsmen of Ethiopian regions. What factors have contributed to the marginalization of craftsmen? How have they responded to derogatory terms used against them? What are the challenges faced by development workers and policy makers to bring craftsmen into the “mainstream”?

On macro bases, dissemination of modern technologies in Ethiopia suffers from the following drawbacks.

1. Lack of awareness (rural outreach of technology, over which 90% of the society has no knowledge
2. Unavailability of efficient system and services;
3. High capital cost of key element in our case; and
4. Inappropriateness of products in the local market.

Due to this, the author of this article is proposing the laboratory-based knowledge he has developed in Science and Technology Commission² as an alternative remedial solution to overcome these bottlenecks. Blending of technologies is a methodology through which social science will facilitate craftsmen to realize their powers, talents and aspirations (unfortunately the relationship between craftsmen and social scientist is inexistent in our country due to which popularization of techniques is at stake). “Transition into modernity in Ethiopia”: remained still unfinished work. As a result, this article would have a lot to say. We are imitating the technological advancement of the west without any attempt to avoid the evils of technology. Hence, there is, however, a danger that while attempting for a “sustainable development” man becomes a weak “Catch-all Phrase”. There are already many alternative definitions, but in the frame of this article, we hope to alter the approach of technological restructuring process; due to which Solar energy and Biogas digesters are scrutinized as an alternative energy technologies which could, in other words, be classified as science for environment.

The key to growth in the postindustrial economy is rearranging technology and labor into innovative pattern. Traditional technologies lack innovative and dynamic pattern and therefore do not encompass continuous improvement. That is why the idea of blending traditional and modern technologies is proposed in this paper. Limiting ourselves to technology is very difficult since technology itself is culture. The only vital objective we have considered is that our “human technological adjustment” has to respect the diversity and cultural identities of each regional state in Ethiopia. Furthermore, the celebrated issue of women equity and collective self-reliance, according to the author, could materialize if and only if there is diffusion of technology, which is the base for genuine division of labor between men and women. Hence, the following queries need t be raised.

What should the nature of handicraft be? What is its body of knowledge? What is its place in less developed countries during this millennium? How could indigenous technical knowledge assist in managing the natural resources? How could we bring about ecology conscious activity? How could women’s overloaded

working days be eased? How could handicraft be integrated into formal and adult education? What should the duties and responsibilities of research and development institution be?

This paper will shade light not only on these questions, but also attempt to give firm ground in meaning, values and purposes for life. I think, we cannot live as we did in the past. Inadequate knowledge coupled with its poor application of technology lacks the dynamism of resolving the growing crises we face due to technological breakthrough at communities and individual levels.

THE PROBLEM

Ethiopia is battle of modern and traditional technologies since the majority of the population implements products of traditional knowledge. If technology has been there since ancient time, what then is the problem we are facing in this millennium? The answer has to do with the efficiency, reliability, amount and maintenance of technology around us; how quickly it grows and changes, and how much it affects our lives. In rural societies, farmers and the society at large do not implant any technological device (mechanisms) in their day- to -day activities as means of productive utensils, transportation of goods and water harvesting. Science, which effectively has the power of directly restructuring human qualities of life in a society, is not implemented in our country at all. Hence, results in providing work simplification and optimal use of labor (mechanics, motive forces, even basic equipment such as chair and bed etc.) is at stake. Animal power and natural resources such as alternative energy resources and its software are not incorporated in our day-to-day activity. This is due to the fact that science as restructuring element within the society is given a special place. 1. In conceptualization of culture. 2. In the process of being productive, and achieve an overall development of the society, men are compelled to improved their instruments of labor and develop their skills to make their work easier and produce material wealth. In this millennium, it is taken for granted that technology is in the process of freeing man from drudger, poverty, disease, danger from ignorance and

isolation. During the process of consummation (evaluation), tool making began with purpose through which human being liberated his/her hand. It is as the result of tool making process that man developed a habit, as an intersection of *knowledge*, *skill* and *desire*. That is why we observe abundance in technology in the developed nations. Hence, science and technology in most areas made

the world much less of a mystery than it was in the past, and its explanations are sometimes almost alarmingly straightforward.

- Among the major hindrances of technological development, we can pin point very weak science and technology capacity and application, which eventually led to persistent backwardness.
- Lack of technological endeavor as regards the assessment of available traditional/modern technologies at national, regional and international levels.
- Absence of technology in every day life of the society i.e. transportation, agricultural development (structural and technological), manufacturing etc. i.e. lack of preparedness to use more and more technologies
- Malutilization of HI-TECH equipment and lack of manpower to maintain complex instruments.
- Lack of regulation of foreign technology flow (avoidance of cheap technological products) to establish adequate balance between local/traditional and foreign technologies which could end up in polluting, deskilling and dehumanization of the less industrialized countries, for creativity and innovation are systematically avoided from these modern products.

Hence, identity crises of man in the rapidly changing world of today is becoming the order of the day, where man loses sight of the value of his own culture, personality and religion. The following specific technological problems are Micro phenomenon of the process of bridging the technological gap. We must not confuse societal issues, which are Macro in nature and management issues, which are Micro in nature although there is a relationship. Science and technology in most areas made the world much less of a mystery and almost alarmingly straight forward than it was in the past, that is why blending of technologies is recommended.

1. Lack of assessment of available traditional/modern technologies at national, regional and international levels;
2. Major constraints to agricultural development (structural and technological)
3. Lack of consideration of the limitations of traditional technologies such as cumbersomeness, ineffectiveness and stagnancy;

4. The constraints impeding the adoption of modern techniques to produce qualitative handicraft production;
5. The negligence and avoidance of technical skills at levels;

6. Lack of vision in mechanization of human labor (be it household or agricultural access to animal/tractor drawn equipment);
7. Lack of recognition of the role of hereditary factors (Potters, Smith and Carpenters were deprived, not only from education but from other social privileges as well) and bodily state, conditions of work and its environmental (Social, Cultural and Ecological) effects;
8. Low level of Gender participation, for toilsome handwork is relegated to women, and
9. Lack of strategic approach for product design and development of small-scale industry

Traditional knowledge does not embody high volumes of information, neither has it got dynamism in commercial sector, these issues are burning facts that have to be dealt with. The following constraints fall under Macro phenomenon. With this and other similar approaches, it is believed that the above-mentioned problems could be solved.

THE NICHE FOR BLENDING OF TRADITIONAL AND MODERN TECHNOLOGIES

The human economy is an open system that depends on a net input of energy, natural resources, handicraft and other environmental services. For instance, about 52 million people in Ethiopia are illiterate and live in total darkness, and less than 10 percent has access to portable water/PC and the majority of the society does not implement technology in every day life. The African market is not only over flooded with cheap goods from foreign countries, but also the pre-requisite for revitalization of technicians ability to adopt to changing circumstances is deprived or misunderstood for they are classified as blue collar technicians who are out cast from all sectors of life ³*Globalization is a new concept for ecological conscious, technological, economic, political, and socio-cultural transformation. A life between a life of “mega cities” and the migration and commodity exchange from mega cities to small cities or vice versa is causing an enormous problem. Unlike number of staff required, while at the qualitative level people and equipment have to be restructured (without the need of urban cities) to a much higher degree, blending of technologies will create more job opportunities for women and farmers. Over and above, these countries have neither Regional nor Technological policy to support traditional technologies.*

The innovation taking place in both advanced and developing countries are of incremental as well as radical nature. While the concept of intermediate technology ordinarily refers to incremental innovation, that of technology blending typically deals with more radical ones. In less industrialized countries like Ethiopia, a large number of people continue to depend on the use of traditional

technologies for their livelihood. These traditional technologies⁴ are inefficient, stagnant and cumbersome, which is muscular, force intensive. Developing countries could move away from these manual methods and directly implant flexible manufacturing systems without first having to introduce fixed automation⁵. This basic general restructuring of the society through science that relay on traditional knowledge and technology will hopefully bring about change without destroying the wealth this community has. Such entrenchment of science teaching in the society is also an alternative method to develop technologically backward societies such as Ethiopia. For instance, the following technological approaches could be scrutinized as conceptual take off points, which could give us a clue on what type of technological advancements to follow.

The goal of the blending methodological approach is therefore to achieve continuous improvement of technologies, avoidance of toilsome handwork, higher levels of commoditization and internalization of technical skills. Hence blending of technologies relies on implementing advanced, cleaner technologies to reduce the impact of human induced emissions on the quality of human life and the world around us. The most important reason of blending is facilitation of competition in the context of globalization of the world economy and technological break through, for the crafts like Electric Metad (oven which is result of pottery and electrical technology¹) competed with others for the last forty years or so, so that Injera cooking become smother and better before imported devices and high electricity rate had an effect on it. Further, the celebrated issue of women equity and collective self-reliance according to the author could materialize if and only if there is diffusion of technology, which is the base for genuine division of labor between men and women. Hence, through blending of technologies equal allocation of household duties can be achieved. This in actual fact is the beginning of the long, arduous task of reorienting innovative technique and acceleration of technological advancement. The advantage of this participatory innovation development and extension is based on three

interlinked concepts: cross-cultural exchange of traditional knowledge, craftsman experimentation, and the strengthening of the self-organization capacities of rural communities, towards collective self-reliance. Over and above, the ability to respond to the existing technological beak through is one of the greatest challenges and principles of intellectual growth. One does not have to follow any order, commandment; one has to simply follow one's instinct/awareness (by developing a procedure of your own to design your experiments). One is functioning like a mirror, reflecting the situation and

¹ For the last forty years there was no advancement in this regard. Currently Mulugeta Detsa has developed automated electrical Metad which is efficient and appropriate for hygienic and large scale implementation.

responding to it, not merely out of ones memory from the past, but acting fresh on the technological task. This is the noble quality of combining modern science and ancient practice that could lead to new manufacturing technology, which does not have to be complex. In this process of blending methodology, we encourage both our male and female artisans to learn some additional trade. Our fact-finding mission/assessment has verified that they are excellent artisans and work in faraway (Bonga, Gonder, Gojam and Tigray) regions with their hand and accomplish honest work, they add to not only the country's exchequer, but also to the luxuries of life for their families.

A handicraft, which is an element of life's fundamental culture, has always been such basic intrinsic part of human development that society pays little attention to Crafts-work can absorb some of the rural population and provide employment and income, and could be integrated with alternative energy resources.

THE METHODOLOGY OF BENDING OF TRADITIONAL AND MODERN TECHNOLOGIES

So as to be able to undertake the blending process, not only assessment of the technological shelf needs to be effected (in-house and international), but also the philosophy of our traditional knowledge and tools need to be explored. It is due to these that the analysis and verification of the following issues has to be pragmatically tried out.

Handicraft is an occupation of making by had usable products graced with visual appeal. Handicraft encompasses activities that require a broad range of skills and equipment: farm utensils (sickle, plow and yoke) including needlework, lace-making, weaving, printed metal working, jewellery, leather working, wood working, glass blowing, horn craft and the making of stained glass and its fusion with metal.

Handicraft thus embodies two components: hardware and software, which includes the know-how, i.e. the art and technique of converting raw material into productive devices-folklore science. Illiteracy with incapability are confused with handicraft. This is a formidable obstacle that impedes the dissemination of any new technology in tradition-dominated rural societies, geared as they often are to subsistence or semi-subsistence living conditions in imperfectly linked and imperfectly organized markets and cultural centers, (it is due to this that traditional knowledge is wrongly classified as simple, ignorant and without intellectuality/primitive technology by some scholars. Please refer amazing blended devices of far eastern countries such

as China, Thailand and Japan). The so-called craftsmen however are by no means the unsophisticated thinkers, they are in fact as common sensual in their actions and deeds and as rational in their expectations as we moderns are. Human beings, without the benefit of science, have probably always known much more or less than what they were up against. Thus, the sublimation process we observe in these countries is not the result of research and development.

Till modern times, it was the duty and responsibility of the handicrafts men to pass down to the next generation what they know in conventional sense. No creativity, no machine, no methodology of market promotion was associated with this arduous technological process in contrast with what usually the tradition was in Europe. Hence, it lacks continuous improvement, which is usual in the process of technology transfer.

Its need or value for any kind of organized change and perpetuation has always been undermined because skilled technicians were despised and underestimated. To add to the problem, there is no market for local products, and in rural areas there is limited purchasing power. The craftsmen not only lacked spirit or vision in what they did, but also lack the system to promote their products.

The homegrown idea behind blending modern and traditional technologies does not only rely on exploring the pragmatic skill of ancient times i.e. not only does it explore the root function of human kind but it also revitalizes the cradle for mankind. Thus, this innovative blending methodology of modern and traditional technologies makes the impossible possible, which does not only bring about qualitative change in life but could creatively be implemented as seeing the seeds of industrialization (for it embodies the element of continuous improvement of the modern technologies). Hence, we are looking at technological break through in terms of quality of life of everyone, conservation of the environment, and promotion of ecology of conscious development. This paper verifies the questions, what does the government believe is relevant to produce? What do we think is relevant to be manufactured? What resources and what methodology should we implement in this process of development? These problems could be tackled through the following laboratory based creative devices developed by the author, who places blending of technology as a Core desire. No progress can be made without effort, for development requires innovation and innovation requires entrepreneurs, hence the fundamental phenomenon of economic development is satisfaction of the basic needs for those struggling in the “Prison of poverty”⁶. The issue we will address is dissemination of information, which exploits the socio-economic duality, created by the coexistence of modern and traditional sector. In this process, there is embryonic shift in the theory and practice of technical skill

development and natural resource management. The paradigm shift represents a move from an industrial (technical fix) approach to technology development to an organic or holistic approach. Hence, from environmental resource control by big organization to resources management by local institution, and from a technocratic to a participatory approach could be managed through avoidance of undervaluing of the local artisans produce, before globalization of technologies. Hence traditional knowledge which is the end result of habit as mentioned earlier should be modernized with its theoretical paradigm, what to do? Why to do? How to do? (Skill). In order to make something a habit in our lives, we have to have all the three. Our character, basically, is a composition of our habits. Hence, to convince a man, you must act to his self-interest, his desire, and his will. It is every bodies desire to avoid spending too much time on non-productive tasks that are back breaking and painful.

TECHNOLOGICAL BLENDING PROCESS means to merge/amalgamate or unify traditional and modern technologies. In this blending process, we are not focusing on technological break through or new discoveries that would change all our ways of producing and utilizing goods and services. We are discussing something much humbler, step-by-step change of behavior/attitude that would rise and upgrade the technological need/demand of the rural communities. This new direction for technological program is not a cheaper remedy to our overall ambition of improving the superstructure of our societies. It is rather a means of fundamentally redirecting the root function of traditional technologies. If self-knowledge was the beginning of wisdom in advanced countries, for Africans reproductive thinking could be the cornerstone for the upcoming technological break through. A skill requirement of the 21st century involves the future employee himself. A rapidly changing environment, without solid boundaries are emerging with the century, to respond effectively to it, peoples need more than just a knowledge base. They also need techniques for exploring it, connecting it to other knowledge bases and making practical use of it. The modern technology, which has dynamism in it when blended with traditional technology does not only bring about qualitative improvement, but will also become eco-friendly. Such development and provision of appropriate technology to help rural African communities is a constant challenge. Success depends upon targeting essential, repetitive and demanding tasks; using, wherever possible, locally available resources and materials; involving the benefiting communities in ownership of the project; careful assessment before and after implementing changes; and providing skilled support and education with a view to eventually producing a self generating needs or creating awareness and promoting markets which can be systematically incorporated with this blending process. The concept of work simplification has to implement basic physics and mathematics traditional and modern technologies without mystifying the crux of the matter. The main actors in such process are the beneficiaries themselves, in particular women as

they are the managers of the household energy systems. That is why the issue of women and science crops up. Especially farmers, children of school age, and women who are the productive elements of the society need to be transformed without sophistication and mystifying (these technologies could create the base for gender equity as well).

As we have observed it in the introduction, a lot of capability and know-how is hidden in remote villages of Africa. We have unearthed graphs and diagrams (mathematical/physical models) and maps, which African people have drawn on the scripts of monasteries⁷, caves and grounds in African communities and villages. Even if these sketches are detailed, colorful, illustrative village handicraft tools, household utensils, available natural resources, and sunshine/rainfall hours do not shade light on their pertinence effect in the respective communities. This indicates that there are amazingly more things/product than are dreamt (it is believed that there is stone smelting machine in Axum) of in commonsense crafts work, they have gone all out to establish the seemingly outrageous spirit product that anomaly rules. The result of this so-called folklore science would have to first of all be reinforced with physical and mathematical theories (refer to solar cooker and solar blood drier developed by the same author). The manual/muscular skill and the control of the muscle on visual bases do not need a lot of efforts. There is much crosschecking to be made and the information presented and shared visually has a high degree of validity and reliability. Through gradual step-by step approach new methods for local people could promote production. This changed behavior and attitude within the society could encourage outsiders to bring about qualitative changes. From the above-cited well-developed traditional technologies, the blending results achieved focus on the following four crafts:

1. Pottery
2. Basketry
3. Carpentry
4. Horn Craft

These selected traditional technologies rely on basic or fundamental abilities of human beings, material and modern technologies that are blend-able.

These are: solar technology, bi-gas technology, electrical technology, animal activated water harvesting/wind energy, fly wheel (made up of wood), fuel saving devices and miscellaneous machines/instruments (refer to illustrations).

In contrast to purely sophisticated technologies, these blended technologies are not only eco-friendly but are not also detached from the life style of the remote villages of less industrialized counties. As we know, modern technology is believed to bring about comfort, efficiency and pleasure which when blended could grant traditional technologies acquire both characteristics. Balance is all, do

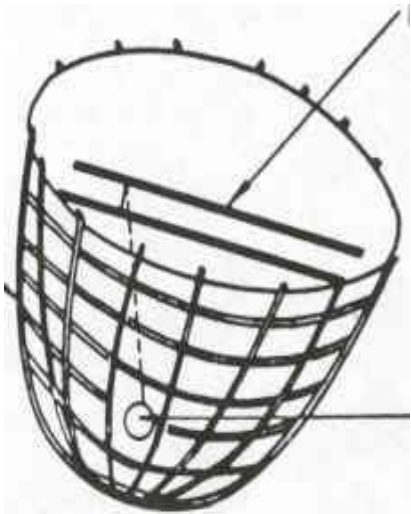
not choose, do not reject, accept both and create an inner balance (comfort zone), this is the crux of this blending methodology. These home grown devices that implement local technology and local materials were developed and realized through research and development as a result of tedious trial and error, hit-or-miss, time consuming work.

SOLAR COOKERS

In order to be able to utilize solar energy, the first thing to be done is to collect solar radiation. The most convenient way of utilizing solar energy is to dry with solar energy. All solar cookers use reflectors in correspondence to the environment and simplicity; thus solar cookers could be cylindrical/flat or spherical.

Planning every detail of producing a blended product of quality in the least expensive way was the cornerstone of this creative process. For such an idea to qualify, it must eliminate or reduce a pollutant; use less energy or make better use of resource, be technically innovative (new and different), and save money. None of the above-mentioned blending methods are complex or Hi-Tech. Based on blending of traditional and modern technologies, which relies on local material and local technology, a very comprehensive homegrown example of spherical/cylindrical cooker is the “Sun Basket”. This could be constructed from cooked Bamboo, paper machee reflector (Aluminum folia). Where there is a shortage of bamboo, various sorts of flexible trees, savanna grass or wire mesh could be used. The reason we have named this cooler a “sun basket” is because it enables us to collect the solar radiation at a certain spot called “focus point/focal line”. Solar cooking does not need stirring and conventional energy supply, due to which it has to be clear that the tedious labor involved in cooking would be lifted and productivity would increase. If it is winter or is rainy/cloudy, fuel saving stove could be implemented which is again the result of blended technologies. Concomitantly women would be able to spend more time and resources on their families, thus improving the social aspect of national development.

Solar drying is an excellent way to preserve food and solar food dryers are appropriate food preservation technology for sustainable world, because seasonal crops and fruits are damaged and wasted due to lack of preservation. For instance, our coffee could meet the international standard if it is solar dried. Our dream of setting ETHIOPIA alight could also be realized through solar energy.



HOW A SOLAR COOKER WORKS

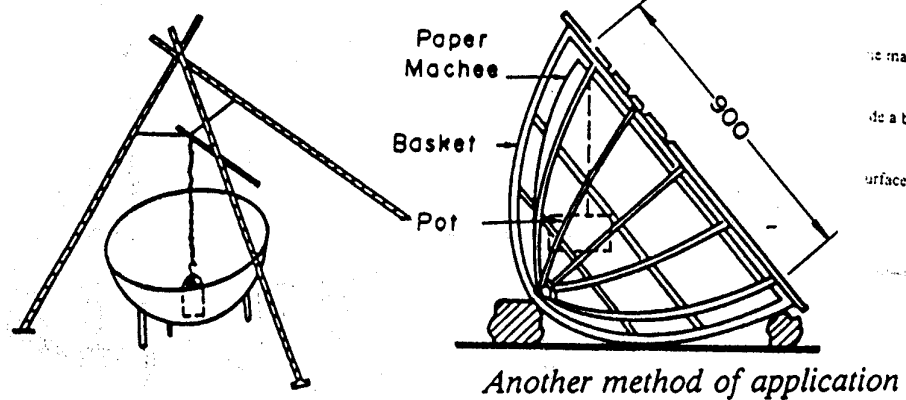


Fig. 1. Illustrative view of the solar cooker, and its application

ANIMAL DRIVEN WATER HARVESTING METHOD

Rain dependency is one of the major problems of Ethiopia; which if animal activated/driven force is creatively used, it could also grant not only food self-sufficiency for men, but could grant the animals enough food and water to live on. Hence, the mechanization of agriculture and household should be encouraged because it would decrease the workload of remote societies at large. For instance, solar water pumping, solar arrester⁸ could liberate the girls/boys that fetch water and herd animal.



A group of school aged girls on their 3 hrs long journey to fetch water.

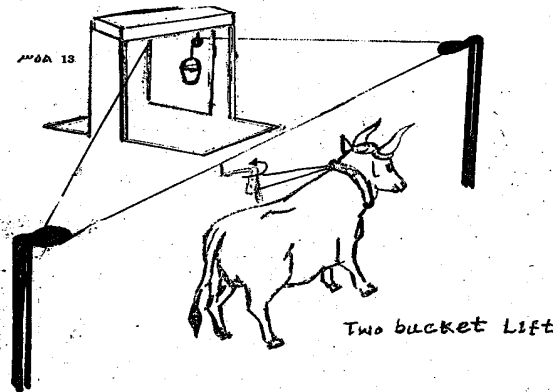


Fig 3 Animal Driven Water Harvesting Method



BIO-GAS DIGESTER

This is another example of energy source produced by bacterial growing inorganic material under anaerobic conditions. This section is based upon an age-old Chinese tradition of composting human, animal and plant wastes to produce an organic fertilizer of high quality. However, by fermenting the materials in an air tight, watertight container, methane gas can be produced and collected for use as fuel for motors, cooking and illumination and the liquid slurry can be returned to the land as fertilizer. Furthermore, digesting the wastes in a closed container kills many of the pathogens responsible for common rural diseases. What would be regarded in many countries as, at best, an efficient system of waste disposal can become in Ethiopia a comprehensive, controlled method not only for improving rural health but also for recycling resources and supplying energy as well. In this country, families have private plots for vegetable and may have a dairy farm where the products can be traded. The Bio-gas digester that we want to develop will be used to generate illumination and heat for cooking purposes. The stove and other accessories are blended with mud technology, similar to Electric Metad, which is the end product of mud technology and Electrical technology. The by-product of these Bio-gas digesters can be used for fertilization purposes. This natural fertilizer can easily replace the artificial fertilizers, which is affecting the Ethiopian staple feed (Teff).



b. Management and implementation of the Biogas digester

Solar arrester: Shepard boys could be liberated, and be able to attend school with such basic technology of solar electrifying wire fence

The backbone of this paper develops various alternative techniques and remedial solutions, through which the desired goal or goals of evaluating these alternatives are spelled out. If we accept the fact that nothing could stand in the path of technology as a civilization process, choosing the best alternative and realization of this project should start up with the construction of prototype devices in various demonstration centers, and effect the familiarization process. The process of blending modern and traditional technologies should not focus on doing the right things but must rather focus simply on doing things right. With this convergence effect, a more fluid and demanding labor market could gradually create an acceptable living condition.

Blending of modern and traditional technology in actual fact is a process of removing constraints of traditional technologies, which would be a tool to bridge the technological gap.

This being the case, in the localities where this paper focused on, technology does not come from knowledge and skill so as to convert raw materials, tools and energy to create products and services. Surprisingly enough the same resources used in ancient days are still being used. This in turn hampers development and introduction of new technologies, which is a missing element in our country. I also discovered that some of the tools that these people use at present are similar to our ancestors for they lack the skill to use the following resources that are readily available around them:

- | | |
|----------------------|-----------------|
| 1. People | 5. Time |
| 2. Energy | 6. Raw material |
| 3. Tools and machine | 7. Knowledge |
| 4. Creativity | 8. Skill |

Knowledge is a key ingredient of our technology receipt. However, the possession and understanding of facts alone will not bring about development of new technological knowledge, which gives us not only the power, but also creativity and direction. Thus, the blending of traditional and modern technologies can be used to develop experimental solutions for the above mentioned impediments.

Hence, the length and time required to adjust to modern technologies, and to balanced supply and demand strongly depends upon the success rate of the blending process. Naturally, the technical skill internalized while the blending process could eventually be used for maintenance of HI-Tech equipment.

The purpose of such blending process can be summarized as follows:

1. The Price of change will quicken, for continuous improvement is incorporated in it;
2. The change will impinge on all citizens, young and old, rich/poor;
3. A great part of the change will involve new technologies and their impact on living conditions and on the environment; and
4. The vision of reducing poverty will acquire practicality.

The out come of this project will facilitate co-modification, income generation, avoid environmental degradation and will empower the rural community with market. The reason of our poverty and our social injustice is due to our technological backwardness. Women are not given an equal opportunity to be productive and care for her family in the villages. The division of labor between men and women is unhealthy in the countryside. Water has to be fetched, firewood has to be gathered and food has to be cooked. Over and above, children have to be nursed and etc. As the result of implementing all the above non-labor intensive/ecology conscious devices, the backbreaking labor will be avoided and equal opportunity will be provided for women creating gender equity. This enables her to be productive and be able to deal with income generation activities, thus granting the whole population a tool and philosophy to be productive. Once the objective need of women is realized, through technology led development, then the strategic need would have fertile ground. If we lack the knowledge and skill to handle these changes effectively and creatively we stand to lose even more than we have already lost. If science is “knowledge ascertained by observations and experiment critically tested, systematized and brought under above mentioned general principles” then such systematized approach of bringing modern and traditional principles that lacked in the Ethiopian traditional knowledge could be what people needed in order to survive in daily life which is a typical human way of gaining pragmatic knowledge. We can call this remedial solution not only education for scientific culture but we can use it to secure job and introduce “energy technologies” as a transformation process of the backward technical utensils to efficient and reliable technological product. Hence, through this blending method, the aspirations for equality, dignity and fulfillment will become realities for less industrialized counties.