Rural Industrialization in Ethiopia: Time for Action

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Author's note: This paper was sent to senior Ethiopian government officials including Prime Minister Meles Zenawi last July as a policy advocacy paper from the Diaspora.

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Executive Summary

Eighty-three perecent of Ethiopians live in rural areas still deriving their livelihoods from subsistence agriculture. The concentration of crop and livestock productions in the highland areas, coupled with population growth and inappropriate land use, has resulted in the depletion of resource bases (land, water and vegetation). Despite the gains in agricultural production in recent years, Ethiopia still remains faced with the problem of food insecurity. The time has thus come to consider concerted efforts that support rural industrialization which would lead to a reduced reliance on subsistence agriculture as a main source of livelihoods while transforming the economy and promoting long-term food security.

The Ethiopian economy is (following Walter Rostov's theory[2]) at its pre-take off stage of growth as characterized by the expansion of education, health, electricity, infrastructure, financial services and market facilities along with an infant manufacture sector and the emergence of commercial class accumulating wealth and investing in the economy. This pre-take off growth will generate the dynamism essential for the expansion of the economy provided that there are continued efforts to develop the country's industrial capability including technology and skilled workforce. More importantly, there should be a clear vision and deliberate strategies to support the growth of rural-based industries which can manufacture a variety of products like bricks, tiles, roof tops, furniture, textile, diary products, meat, fish, poultry, fruits and vegetables, beverages, lumber and wood, hides, soaps, detergent, wool, cloth and many other semi-finished and finished products. These industries would provide jobs for millions of rural Ethiopians and improve household income.

China is an example of a country where rural industries drove economic growth and lifted hundreds of millions of people out of poverty. By 2004, these industries in rural towns and villages alone had employed 139 million people. The Chinese rural industrialization strategy had many features including:

- Establishing linkages between industry and agriculture and promoting their development simultaneously;
- Transferring industrial planning responsibilities to local areas;
- Development of rural industrial capability (technology and skilled workforce); and
- Encouraging local officials to play an entrepreneurial role in support of local industries.

This paper then calls up on the Ethiopian government to launch a program of rural industrialization that develops rural industrial capability including the following initiatives:

[2] The Stages of Economic Growth: A Non-Communist Manifesto, 1962.

- The creation of technical and organizational resources for Woreda governments, so that they can support rural industrial growth;
- Technological research and workforce training tailored to the needs of rural industries;
- Initiatives that revive the informal sector (consisting of traditional industries and commercial activities); and
- Initiatives that create rural-urban sectoral linkages.

To support the active role of government in rural industrialization, the paper presents one method of rural industrial planning at Woreda level. This method includes value chain analysis, feasibility study and project planning.

Finally, it is recommended that:

1) This paper be used as an input to the discussion of the next national development plan (successor of PASDEP) in order to consider the formulation of multi-sector strategies in support of rural industrialization; and

2) The rural industrial planning method presented in this paper be considered as model to design an industrial planning tool including a training program for Woreda, zonal, regional and federal government officials, so that they can support rural industrial growth.

1. Introduction

The Ethiopian economy is dominated by subsistence agriculture consisting of cropping and animal husbandry. According to one IMF report, in 2006/07, agriculture contributed 46% of the country's gross domestic product (GDP) and remained the main source of livelihoods for the majority of Ethiopians.[3] However, despite favourable government policies in the past decade, the agricultural sector has not provided a reliable source of income for the population. The Ethiopian government's five-year (2005-2010) Plan for Accelerated and Sustainable Development to End Poverty (PASDEP) identifies the challenges as the "lack and/or absence of more business/market-oriented agriculture; adverse climatic changes; failure to use agricutural land according to appropriate land use management plan and resource use; limitation in information base; lack of provision of supply and dissemination of appropriate technology; failure to integrate relevant activities; and lack of adequate [agricultral program] implementation capacity".

The fact of the matter is that Ethiopian agriculture has exhausted its carrying capacity due to land degradation and population growth. This means that agriculture can no longer provide a reliable source of income for the 63 million rural Ethiopians. Therefore, the time has come to consider deliberate strategies that work towards the industrialization of rural areas which would reduce reliance on subsistence agriculture while transforming the economy and promoting long-term food security. The Ethiopian government should facilitate the growth of labour intensive rural industries that manufacture a variety of products like bricks, tiles, light bulbs, roof tops, furniture, textile, diary products, meat, fish, poultry, fruits and vegetables, beverages, lumber and wood, hides, soaps, detergent, wool, cloth and many other semi-finished and finished products. These industries would provide jobs for millions of rural Ethiopians and transform the economy.

Broadly speaking, industrialization is a process of transformation of an agricultural-based economy to an industrial-based economy. In an industrial-based economy, home-based production activities (farming, weaving, carpentering, construction, blacksmithing, etc.) are relocated to factories. Industrial machines operated by specially trained workers replace human and animal powered production technologies, which previously supported home-based production. Workers earn better wages and this improves their living standards. They also use their newly acquired economic power to demand better living conditions and participation in the political process. Furthermore, unlike an agricultural-based economy, which can be vulnerable to the boom and bust of commodity markets, an industrial-based economy provides a stable source of sustained economic growth; the economy is diversified, so that a decline of one industry can be compensated by an increase of market opportunities for another industry. The United Nations Industrial Development Organization (UNIDO) stresses that developing countries seriously

[3] *The Federal Democratic Republic of Ethiopia: Selected Issues and Statistical* Appendix, July 2008, Table 1.

consider the industrialization of their economies as a way out of perpetual problems of economic instability and poverty.[4]

The Ethiopian government has adopted an agricultural led development industrialization (ALDI) strategy which continues to serve as a framework of rural investment planning in the area of infrastructure, social services, research and extension. Hence, the current PASDEP plan has aimed at achieving the expansion of health, education, electricity, marketing, roads and other facilities to rural areas (see Table 2. p. 13). The missing dimension in the ALDI strategy and PASDEP plan is lack of a clear vision and deliberate strategies to speed up the growth of rural industries that utilize local resources to stimulate economic growth and meet the needs of society. While post-1991 government policies have created a good climate for industrial growth, this has remained concentrated in urban areas without the benefits trickling down to rural society. It is therefore important that Ethiopian policy-makers move away from the "trickle-down" thinking of economic growth that industries first grow in cities and gradually expand to rural areas through supply-demand linkages or direct investment. This approach has been tried for decades and did not work. Instead, the Ethiopian government should enter the countryside with a package of programs that deliver knowledge, know-how and resources to support the growth of industries which create employment and transform the economy.

China is an example of a country where rural industries drove economic growth and lifted hundreds of millions of people out of poverty. Chris Dramall cites sources that indicate the employment, by 2004, of 139 million Chinese by rural town and village industries alone.[5] The lessons from China are:

1) Strong leadership. The Chinese Communist Party ensured that industries were linked to agriculture through the provision of direct support (inputs and services), and later in growth years (1980s and onwards), taxes and profits from industries were used to support investment projects that expanded rural infrastructure and services.

2) Decentralized planning. Local governments played the leading role in industrial planning; they were expected to use their local knowledge to make appropriate investment and production decisions. In the post-Mao economic reform period, local governments assumed responsibilities for managing all state-owned enterprises.

3) Modernizing traditional industries. These industries were scaled up by equipping them with modern production technologies, new organizational models and provision of modern facilities like water and electricity.

4) Persistence effort to achieve industrial self-reliance. By the 1960s, the Chinese had already started intensifying efforts to expand heavy industries in order to be able to produce industrial machines and tools.

[4]Industrial Development Report 2009: Breaking In and Moving Up – New Industrial Countries for the Bottom Billion and the Middle Income Countries, 2009.
[5]*The Industrialization of Rural China*, 2007.

5) Government support. Different levels of government provided support to local industries in the form of finances, technical assistance, marketing and product design.

6) Incentives. Cash bonuses were given out for cadres and local officials who made collective enterprises profitable. Particularly, the cadres were playing supportive roles for local industries by finding markets and promoting local products (just as sales people would do).

These lessons are further elaborated in accompanying background material on China which can be found in Annex A. Suffice to say here that there should be no one-size-fits-all development strategy. Ethiopia is unique and different from China in terms of history, geography, population, culture, resource endowments, socio-economic realities and other factors. The Chinese experience is mentioned here to show that rural industrialization is something that can be conceptualized and planned with government leadership. And the reason to do this in Ethiopia is obvious. Given the exhaustion of carrying capacity of Ethiopian agriculture, local industries must be grown to create employment for the rapidly growing rural population. As rural areas lack technology, know-how, capital, institutions and other resources necessary to induce industrial growth, the Ethiopian government must fill this gap by providing technical, financial and organizational assistances.

While there is a growing body of literature on politics, macroeconomic policy, international relations (including foreign aid), land, environment and other subject areas of concern, little attention has been paid to the Ethiopian industrial sector in relation to its size, diversity, productivity capacity, growth strategies and other structural factors. Nor has there been any thinking beyond the usual rhetoric of "off-farm employment" and "agri-business" to conceive the idea of rural industrialization as a viable solution to poverty. This paper thus contributes to theoretical and practical understandings of why industries are important in the Ethiopian economy and national life and what can be done to support their growth in rural areas. The next section provides a brief overview of the Ethiopian economy including the challenges and opportunities of industrial growth and expansion. Section three assesses how current government efforts can create the conditions for rural industrialization by diffusing knowledge, know-how and infrastructures to rural areas. Section four presents one method of rural industrial planning that enhances the capacity of the Ethiopian government at Woreda level to identify, plan and support local entrepreneurial initiatives. The last section concludes by repeating the call for the development of a program of rural industrialization and making recommendations. Since the target audience is government officials, the paper is more descriptive and explanatory and not concerned with academic argument and analyses of historical and contemporary debates.

2. The Ethiopian Economy

There is now a large body of literature in the field of economic development and reviewing it is beyond the scope of this paper. However, we can still consider two original thoughts as a way of setting the context for this discussion. The first is Arthur Lewis' two-sector economy model that identifies a developing country economy

consisting of a modern industrial sector and an agricultural sector.[6] Lewis came up with this model in order to argue that agriculture should facilitate industrial growth by providing raw materials and unlimited supply of surplus labour. In turn, the absorption of surplus labour by industries would increase the marginal productivity of labour in agriculture. For example, if land holding size had been l hectare/household prior to the availability of industrial employment, this could gradually rise to 2 hectare/household, because there are now fewer people left to work on the farm. This would increase productivity in agriculture and also improve household income.

Lewis' model has been criticized on many grounds[7]. For instance, agriculture should be supported to develop itself, instead of relegating its role to supporting industrial growth. The marginal productivity of agricultural labour could be greater in pick agricultural seasons (this means no surplus labour). For example, Ethiopian farmers complained about labour shortages during the harvesting season, because all the children were going to school; local officials talked about the idea of closing schools for two weeks, so that children could help their parents.[8] Yet, Lewis' theory can still be relevant in the study of a country like Ethiopia where agriculture and industry exist side by side. His two-sector economy analytical model can also help to look beyond modern industries to recognize the needs of traditional industries or known as informal sector firms.

Another earlier thinker Walter Rostov introduced a model that identified five stages of economic growth.[9] The first stage is characterized by an agrarian economy dominated by subsistent agriculture with little awareness of modern science and technologies. The preconditions of economic take off (second stage) are created when modern services (education, health, banking, etc.) and infrastructures are expanded along with a few manufacture industries and the emergence of a property class which begins to accumulate wealth and invest in the economy. At the third stage, primary (mining), secondary (industry) and tertiary (service) sectors lead economic growth. The economy takes off and this completes the transition from an agrarian economy to a modern industrial economy. The fourth stage is the time of "drive to maturity" whereby the economy diversifies and income trickles down to society to alleviate poverty. The fifth stage is the age of high mass consumption, which is an advanced industrial era.

Rostov also has critics who (for example) pointed out that his "growth stage" theory was solely based on the American history of development and so it fails to consider other non-capitalist models of development, such as that of China or Russia.[10] In spite of this, many analysts and international agencies including the United Nations use something similar to Rostov's model to divide the countries of the world into groups of least industrialized countries, middle income countries and advanced industrialized countries.

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[6] "Economic development with unlimited supplies of labour" *Manchester School*, 22, 1954, pp. 139-91.
[7] For these and other criticisms see Ghatak Suberata and Ken Ingersent (1984). *Agriculture and Economic Development.* Harvester press, Sussex.
[8] Personal communications in the Amhara region, November 2008.
[9] Ibd.
[10] See comment on http://en.wikipedia.org/wiki/Rostovian_take-off_model#cite_note-0, February 15, 2009.

We apply Arthur Lewis' theory here to look at the Ethiopian economy in the context of a two-sector economy consisting of the modern industrial sector and traditional/informal sector. We also apply Walter Rostov's growth theory to state that the Ethiopian economy is at its pre-take off (second) stage of growth and will achieve the take off (third) stage in two decades provided that the Ethiopian government intensifies efforts that develop the country's industrial capability including technology and skilled workforce. In what follows, we provide overviews of both the modern and informal sectors of Ethiopian economy as well as broadly identify challenges and opportunities of growth and expansion in these two sectors.

2.1 Modern Sector. The information in Table 1 was obtained online from a South African-based Mbendi Information Services which claims to have 250,000 web site visitors and newsletter readership of nearly 100,000 a month, with 46% African audience. The Table identifies 188 firms which are arbitrarily grouped using the standard classification of modern economy into primary, secondary and tertiary sectors (a complete list of these firms can be found in Annex B). Yet, it is difficult to verify whether the information is derived from a reliable data using a comprehensive list of specific firms or a representative sample of all firms in Ethiopia. Nonetheless, taking these 188 firms as an example, we will be able to get some idea of the size and diversity of the Ethiopian modern sector. Hence, for instance, mining, oil and gas, manufacturing, transport, trade, retailing and communications industries dominate the Ethiopian modern sector. The list of firms in Annex B also shows that manufacturing firms are large and diverse with most of them concentrated in the food and beverage production sector. Other than resource-based industries (agriculture, mining, oil and gas), normally industrial productions are concentrated in urban areas.

Table 1[11] **Sector**	188 firms	100%
1. Primary	**31**	**16.5%**
Agriculture	6	3.2%
Mining	14	7.4%
Oil and Gas	11	5.8%
2. Secondary	**63**	**33.5%**
Manufacturing	50	26.6%
Chemicals	4	2.1%
Construction, equipment and engineering	3	1.6%
Automotive	4	2.1%
Public utilities	2	1.0%
3. Tertiary (service)	**94**	**50.0%**
Chamber of commerce	1	0.5%
Financial services	12	6.4%
Professional services	5	2.6%
Transport and storage	10	5.3%
Trading	21	11.2%
Wholesale and Retail	11	5.8%
Real estate	2	1.0%
Computers and communication	9	4.8%
Travel, tourism and recreation	9	4.8%

These and a large number of other industrial firms play a critical role in the maintenance of the Ethiopian economy and national life as producers, suppliers, distributors,

[11] Mbendi Information Services, http://www.mbendi.com/land/af/et/p0005.htm, retrieved January 31, 2009.

exporters, importers and consumers of services and goods. To illustrate this point, we have presented in Box 1 a list of 30 manufactured goods that could be found in and around a modest modern Ethiopian household. These goods could have hundreds of local, national and global origins or they have created value chains involving hundreds of firms that produce raw materials and semi-finished and finished goods. For example, the manufacturer obtained spare parts from Taiwan to assemble the DVD player. To make the bicycle, the local bicycle shop got steel from a metallurgical company and the spare parts from a parts company. To make the table, the manufacturer got lumber from a lumber company, nail, hammer, glue, etc, from a parts company, paint from chemical company, the building (rent) from a real estate company, electricity and water from a utility company, and truck (to transport the table) from a transportation company. To build the house, the contractor imported heavy lifting equipment and tools from Italy and also got the service of a local consultant to ensure conformity with government construction guidelines. In fact, the 188 firms identified in Table 1 above could be part of value chains in the production of many of the household goods listed in Box 1.

Box 1. Household Products

1. Cooking pot
2. Stove
3. Tables
4. Chairs
5. Bicycle
6. Knives
7. Cups
8. Glasses
9. Sofa
10. Bed
11. Matches
12. Needles
13. Windows
14. Mattress
15. Cement
16. Fridge
17. Television
18. DVD player
19. TV
20. Sugar
21 Toothpaste
22. Toilet paper
23. Facial issue
24. Cupboard
25. Shoes
26. Buttons
27. Light bulbs
28. Doors
29. Rooftops
30. Bricks

On the basis of the examples presented in Table 1 and Box 1, we can hypothesize the existence of two gaps in the Ethiopian economy. First, as a country of 75 million people, Ethiopia has no sufficient industrial capacity to produce goods and services necessary to maintain a modern economy and way of life. This means that the country must continue to import and encounter the problem of trade deficit estimated to reach US $7.5 billion in 2009/10 and increasing to US $11.5 billion by 2014/15. [12] Second, the capital goods (equipment, tools, spare parts, etc.) production industry is in its very infancy. As the example in Table 1 shows, heavy industry firms (construction, equipment and engineering) represent only 1.6% of the 188 firms, which can be a clear indication of Ethiopia's bottleneck in the production of industrial machines, tools and other capital goods necessary for speeding up the process of industrialization. Clearly, then, the production of consumption and capital goods domestically has many benefits for Ethiopians including low prices (e.g. stoves and fridges will be cheaper), job creation, foreign currency savings and the structural transformation of economy. But, all this can be easier said than done. Ethiopia has to develop technological capacity and produce a skilled industrial workforce necessary to drive the growth and expansion of industrial production.

[12] IMF. Ibd. 2008.

2.1.1. Technological capacity. This means the capacity to produce machines, tools and other capital goods domestically to speed up the process of industrialization. In looking at the data for 188 firms in Table 1 above, you might have noticed that the service sector (consisting of financial services, trade, retailing, etc.) has relatively grown faster than the primary and secondary sectors. One explanation for this trend could be that industries in primary and secondary sectors are more technology intensive and this creates a bottleneck in a country like Ethiopia which imports industrial technologies. For example, many Ethiopian entrepreneurs want to replicate (domestically produce) goods that they currently import from North America, Europe and Asia. But, it can be difficult to find suppliers of production equipments overseas or afford to buy the equipments in the first place (they are too expensive). Even then, having been designed in technologically advanced environments, the equipments may require spending additional resources to provide expensive training for workers that operate them.

Ethiopia really needs to achieve technological self-sufficiency through a judicious mix of the following three strategies.[13] First is investment in universities and research centres to create engineering technology capacity that allows the design and development of modern industrial equipments. The Ethiopian government has already seen promising results from a variety of agricultural research. Developing industrial technologies may not be as simple as developing improved crop varieties, but it is not impossible. The aim should be to develop technologies that are compatible with *both highly specialized technical skills and essential life skills*. An example is a situation where a mechanical engineer provides on the job training of four days for elementary and high school graduates on how to operate a soap factory machine including basic maintenance services. If the technology is simple, this can be possible. If not, one has to go looking for university or college graduates. Even then, unless these graduates can maintain the machine, every time the motor makes a creaking noise, it is turned off and production stopped until a mechanic arrives from a remote area to fix it, which may take days.

Second, Ethiopia can buy technologies on the international market and adapt them locally. This can be possible, yet an increasing demand for industrial machines and tools can drain the country's foreign currency reserves. As pointed out above, the technologies may also require spending additional resources to adapt them locally and train workers.

Third, Ethiopia can encourage foreign companies to transfer technologies. Normally, these companies enter Ethiopia either to open new production sites or acquire local companies to restructure and make them their subsidiaries. They could bring advanced knowledge, technology and know-how to create a spin-off effect, such as training of workers and creating technological resources. One problem, though, is that these companies are profit driven and have no interest in advancing broad economic development goals.

2.1.2. Skilled workforce. Ethiopia rather appears to have done well in the planning of workforce training. For example, the PASDEP Plan has aimed to achieve 86% coverage

[13] Rephrased from Robert Evenson and Gustav Ranis (eds). *Science and Technology: Lessons for Development Policy*, 1990.

in primary education at national level and construction of 13 additional higher education institutions that offer degree programs (see Table 2, p. 13). Hence, the World Bank says that (as of December 2008) there were 15 million students enrolled in primary and secondary schools and, in 2007, 203,000 students were taking higher education.[14] These graduates would definitely bring badly needed knowledge and skills to the Ethiopian labour market. However, Ethiopia should also diversify skill-training programs to the tune of growth and expansion of the whole economy. For example, if we consider the industrial classification system of the United Nations (see Annex C), the manufacture sector alone consists of 26 different industries ranging from food and beverage, plastic, textiles, paper, and wood products to metal, electronics, vehicles, chemicals and equipment productions. All these industries require specific skills and knowledge to operate equipments, manage inventories and maintain facilities, as well as highly specialized skills in research and development of products. Unless there are proactive approaches, Ethiopia may lose growth opportunities from new industries, as it takes time to design curricula and train workers for these industries.

Of course, higher education is not the only way to acquire industrial skills. The traditional system of apprenticeships, where people are trained on the job, is the quickest way of learning. The government can give incentives for firms, such as wage subsidy, to encourage them to create apprenticeship opportunities for young elementary and high school graduates.

2.2 The Informal Sector. If you go out to an open *gebya* (market) in a small Ethiopian rural town or village, you will find different entrepreneurs selling and buying a variety of goods and services. Don't forget that the men who sell agricultural tools and furniture or the women who sell cooking clay-pots and beauty products (for example) are also the manufacturers of those products. These entrepreneurs then constitute what is often referred as the informal or traditional sector. Although this sector is large and diverse, we have arbitrarily identified three types of main activities below: [15]

Seasonal Activities: Seasonal activities concentrate on trade and they are more intense during the harvesting season. Examples are buying and reselling coffee, fruits, vegetables, eggs and food crops locally. Traders travel to the countryside to buy products directly from producers (with lower prices), or they compete with a large number of consumers in the open market (*gebya*). Some resell the products in the local area with a meagre of profit, while others take risks (high cost of transportation and storage problems) to go to distant places to make good profit. Traders in food crops are often able to tap opportunities in distant markets, since they are very likely to have better means of mobilizing information and transportation.

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14 World Bank. *Ethiopia: Sixteen Million Students to Benefit from World Bank Credit to Improve the Quality of General Education.* Press Release No: 2008/176/AFR, http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:22013088~menuPK:34463~pagePK:34370~piPK:34424~theSitePK:4607,00.html, retrieved January 10, 2009.

[15] This description mainly draws from the author's experience in Gondar, Northern Ethiopia.

Perennial Activities. Perennial (occupational) activities include retail trade, blacksmithing, pottery, carpentry, construction, hairdressing, firewood and charcoal production, mechanics, repairs, shoe making, tailoring, food and beverage catering and many other entrepreneurial activities. Many of such activities are directly or indirectly linked to the modern sector to obtain commodities like spare parts, sugar, cloth, shoes, school material and medicine. Perennial entrepreneurs are more likely to have better facilities and permanent premises.

Diversified Activities. This means combining two, three or more activities to earn descent livelihoods. For instance, the author knew a young man who ran a kiosk (small retail shop), repaired watches and radios and hired a young woman to sell food, tea and soft drink - all of the work done at the same premise. In another instance, three sisters divided their tasks as follows: one of them traded fruits and vegetables, while the other sold *korefe* (local soft-beer) and the third sister ran a kiosk. In good times, such activities help to increase the level of household income. In bad times, they help to create different survival strategies; for example, if one of the sisters in the example above does not make enough money, the other two would have earned enough to meet the basic needs of the family.

The building of capacity of the informal sector to take up new technologies and organizational models will be the first crucial step towards stimulating industrial growth in rural Ethiopia. Be that as it may, it is also important to critically analyze the growth potential of these diverse informal sector activities and consider those that are viable (in terms of innovation, competition and growth) in industrial planning processes as producers, suppliers, distributors, retailers, consumers, and so on (see section four). While one appreciates many of the characteristics of informal sector activities (e.g. self-reliance, flexibility, needs oriented and rural centred), it may also be true that not all of them have the capacity to innovate and grow. As an example, one documentary by the Ethiopian Television sometime ago found that some of the beneficiary of micro finance programs had little or no business experience and that, in one instance, a group of young people simply ended up setting up photocopy shops on the same street block to compete with each other for customers. Some of those shops might not have survived. The business proposals for those photocopy shops should have been carefully evaluated before making the decision to finance them.

In sum, this section has provided broad insights of the size and diversity of the Ethiopian economy including the constraints and opportunities of growth and expansion. Perhaps one of the interesting aspects of our discussion here is to learn the importance of the informal sector in terms of its role as a main source of employment for millions of Ethiopians and its potential as an "interim structure" of government intervention to foster and promote rural economic growth. Many of the Chinese rural industries that have been credited for economic take off in the countryside were rooted in traditional industries that were scaled up by equipping them with modern production technologies, new organizational models and provision of modern facilities like water and electricity. As we illustrate in section four, all this understanding will be important in the conception and articulation of rural industrialization initiatives.

3. Industrial Capability in Rural Ethiopia: Formative Conditions

One of the thinkers of the 1960s T.W. Shultz wrote that the problem of rural development in developing countries was simply an "investment problem " in infrastructure, services, research and technology. He said that, if farmers were given opportunities, they would "turn sand into gold ".[16] Indeed, the Chinese experience shows that farmers would respond to emerging opportunities (see Annex A). In what follows, we assess how Ethiopian government sectoral initiatives can diffuse knowledge, skills and infrastructures to create the conditions for rural industrialization. These initiatives are reflected in Table 2 as highlights of results from the five-year (2005-2010) PASDEP plan. Hence:

1) Electrification of rural areas can encourage the mechanization of traditional rural industries (weaving, carpentering, black smithing, milling, construction, etc), attract outside capital, extend the hours of business operation (increasing productivity), create better storage facilities, and change the way rural people live, especially by enabling them to use modern appliances (e.g. cooking and storage) and connecting them to the modern world (radio and TVs).

2) Technical support and advice to farmers can lead to increased awareness of science and technology.

3) Rural education can lead to occupational diversification (e.g. repairing production equipments, appliances and electrical wiring). Many elementary and high school graduates can enter the informal sector with skills and knowledge to introduce new technologies and organizational models.

Table 2. Highlights of PASDEP Sector Results
Energy. Increased power generating capacity to 2,218 MW from 791 MW; construction of 11 electric power stations and 13,000 km transmission grids; and 420 rural electrification service cooperatives.
Training. 25 Training and Vocational Education centres established; 55,000 extension workers trained; 18,000 Farmer Training Centres established; 10 million people to receive training.
Education. 86% coverage in primary education at national level.
Higher education. Construction of 13 additional higher education institutions that offer degree programs, increasing overall annual university intake to 150,000.
Health. Achieve "low-level health facilities within 10 km for almost all of the population"; and construction of 94,000 wells and boreholes and development of 13,000 springs.
Marketing. 70% of rural people organized under cooperatives; 108 warehouse, storage, abbators and other facilities constructed; and 10 agricultural commodity exchange centres opened.
Communication. Reduced average walking distance from a road to 3.2 hours; 7 millions telephone lines (fixed and mobile) and 100% access within 5 km; and increase ITC services.
Resource mapping. Increased geological survey to map resource potentials across the country.

4) Cooperatives and other market agencies can help to improve distribution and storage facilities, attract outside investment and increase rural-urban linkages.

[16] *Transforming Agriculture*, 1964, p. 5.

5) Roads and telephones can provide easy access to services, information and markets, so that they speed up economic transactions between rural and urban sectors and also encourage outside industries to enter rural areas.

6) The 107,000 water facilities can improve household hygiene and promote better heath outcomes.

7) Geological surveys can increase inventory of industrial resources and facilitate industrial planning.

In short, these results can mutually reinforce to create the formative conditions necessary for the development of rural industrial capability. Yet, even if these conditions exist, rural areas still face multiple barriers of participation in the economy, such as lack of access to capital, technology, market information and institutional support. Recognizing this reality, we have persisted to argue that the Ethiopian government plays an active role in identifying, planning and supporting local entrepreneurial initiatives. The next section illustrates how this can be done.

4. Towards Woreda (District) Industrial Planning

There are 698 rural Woredas (districts) across Ethiopia with populations ranging from 292,000 (in Mecha Woreda, Amhara Region in Central Ethiopia) to 7,000 (Jor Woreda, Gambella Region in Southern Ethiopia).[17] These Woredas deliver social programs and implement development plans with the support of tens of thousands of Kebeles (locals). Located in the heartlands of Ethiopia, the Woredas thus allow the initiation of planning processes to identify and support large or small industrial development initiatives in Woreda capitals or surrounding Kebeles and villages. However, there are critical prerequisites for carrying out effective industrial planning and producing results, including:

1) The existence of a Woreda technical department with a multi-disciplinary planning team consisting of engineers, economists, rural development agents, financial advisors, market researchers, product designers and other professionals who carry out industrial planning and provide ongoing support of implementation. The staff should be provided with performance-based incentive, such as remote allowances, cash bonuses and extended annual holidays. Earlier, we mentioned how central authorities in China allowed cash bonuses for local communist officials. In Canada, federal government workers who are stationed in Northern Arctic regions receive remote allowances.

2) Committed politicians and bureaucrats. They should undergo a few days of training on how an industrial system works (see below).

[17] Federal Democratic Republic of Ethiopia: Population Census Commission. *Summary and Statistical Report of the 2007 Population and Housing Consensus: Population Size by Age and Sex*, December 2008.

3) Sufficient financial budget to support the implementation of industrial plans including financial assistance (in the form of loans, grants and subsidies) for local entrepreneurs.

4) Availability of roads, electricity, water, communication and other infrastructures and facilities.

5) The existence of technical departments at zonal, regional and federal levels furnished with sufficient technical resources and dedicated staff to provide ongoing support to Woredas, especially in searching locally appropriate industrial technologies, product engineering and market analysis. The staff in these departments should also be provided with performance-based incentives.

4.1. Two Steps of Planning

After considering the prerequisites for effective rural industrial planning at Woreda level, we proceed to consider two steps: feasibility study and project planning.

4.1.1. Feasibility Study. This requires carrying out three closely related tasks: macroeconomic analysis, industiral value chain analysis and area study.

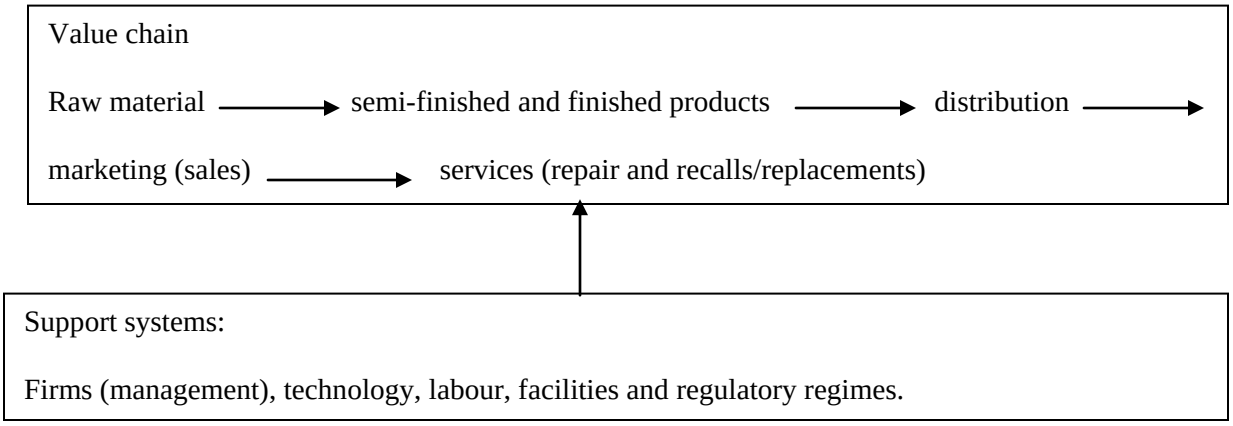
Macroeconomic analysis. Woreda planners review and analyze macroeconomic trends and issues (this is assuming that they would have acccess to more detailed studies than the one presetend in section two of this paper). What factors affect the functions of the Ethiopian economy? What do Ethiopians (as a nation) produce and consume? Who produces what? Who consumes what? For example, the preceding dicussions have attempted to help understand 1) the size, diversity and productive capacity of Ethiopian industries; 2) issues related to technology and labour market; 3) the informal sector consisting of diverse traditional manufacturing, trade and service activities; and 4) government initiatives that work towards the development of rural industrial capability (technology, skilled labour and organizational resources). Such information should be useful in the critical analysis of key planning questions, such as 1) whether it can be possible to develop local industries that can break into local and national markets as suppliers, producers, distributors, retailers and so on, of raw materials and semi-finished and finished products; and 2) whether resources (e.g. technology, labour, infrastructure) are available to support those industries. Under healthy macroeconomic conditions, regional and national industries create an insatiable demand for furniture, lumber, bricks, textile, food items and many other rural products, in large part because they are cheaper.

Industrial value chain analysis. How does an industrial system work? The concept of "industrial value chain" provides a framework of understanding of how different firms generate value at each stage of processing, delivery and sale of manufactured products.[18] Figure 1 below illustrates this value chain beginning with the source of the raw material and then the production, delivery and sale of semi-finished or finished products with guarantees of repair services or replacements of defective products. Technology, labour, organization (firm) and facilities (factory plant, roads, communications, water, electricity,

[18] Michael Porter. *Comparative Advantage*, 1985.

etc.) are the primary conditions for the processing, packaging and marketing of manufactured products as are laws and regulations which enforce standards of production and transparent and accountable business transactions.

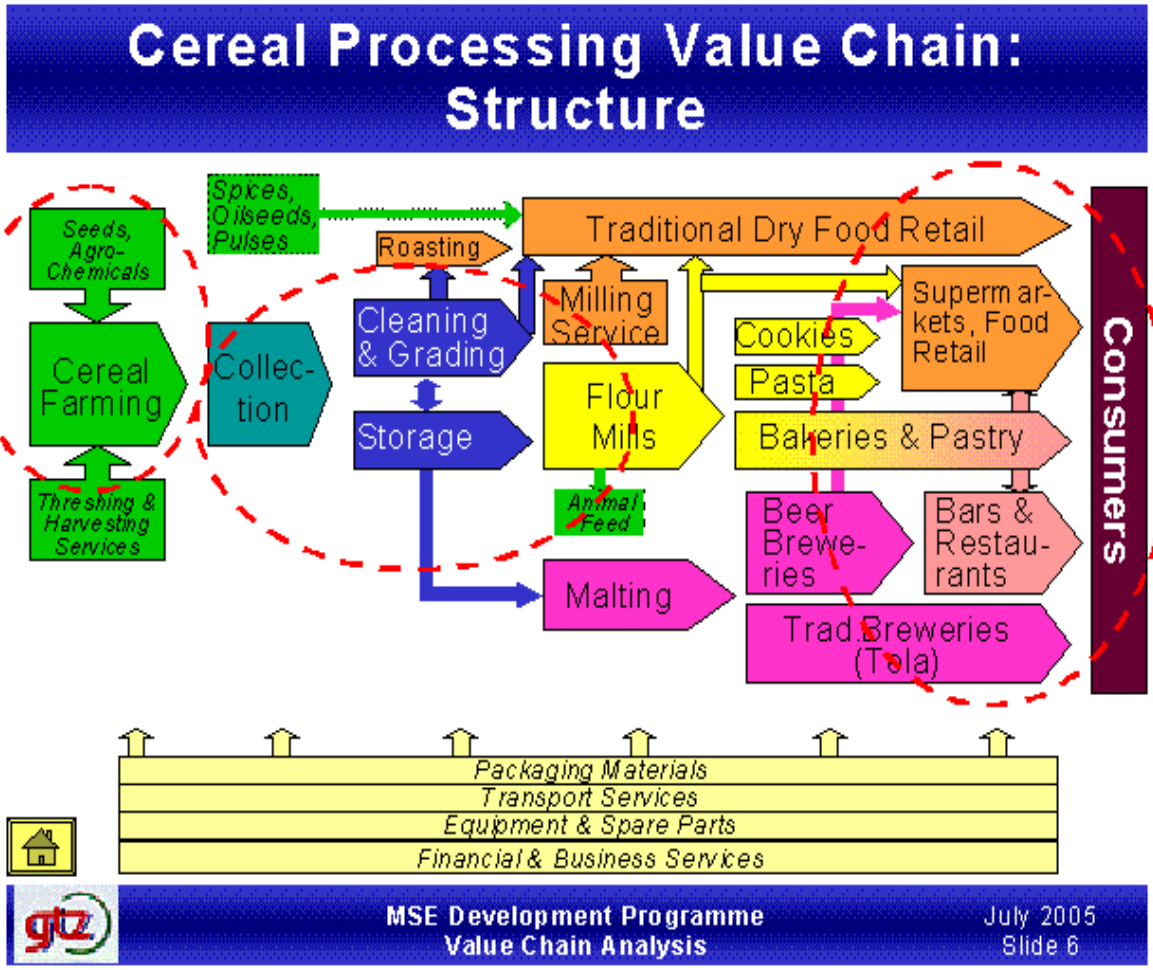
Figure 1: Industrial Value Chain Analysis



A diagram taken from GTZ is presented below labelled as Figure 2 in order to provide an additional exmaple of the method of value chain analysis.[19] GTZ's analysis for a cereal production (which is an excellent work) identifies at least 18 production firms including a farmer, agricultural input supplier, trader, cleaner/grader, miller, brewer, baker, resturants, bars, retailors, transporter, an equipment supplier, a packager and financer. Each firm creates value at each stage of production. For example, assume that a trader has purchased 1,000 kg of wheat direclty from a farmer at a price of 5,000 Birr and sold the wheat (after grading and milling) to a brewery company for 8,000 Birr. The brewer uses the 1,000 kg wheat to produce 4,000 bottles of beer which will be sold to restaurants at a unit price of 3 Birr (for a total of 12,000 Birr). The restaurants will resell the 4,000 bottles of beer to customers at unit pricer of 4 Birr (16,000 Birr). Total value added equals 11,000 Birr (16,000 Birr minus 5,000 Birr). A portion of the revenue generated at each stage of production is paid to workers who perform tasks as machine operators, engineers, consultants, floor cleaners, drivers, accountants, production line supervisers, shop keepers, waitress or guards. By using an industrial value chain analysis, Woreda planners not only appreciate the role of industries in mantaining the economy and national life, but they can also identify potential firms or group of firms and assess their produciton capacity as suppliers, distributers or retailers of local and national markets.

[19] GTZ, *Micro & Small Enterprise Development Programme. Value Chain Analysis in the Food and Construciton Sectors*, July 2005.

Figure 2: GTZ Value Chain Analysis



Area study. Equiped with the knowledge from macroeconomic and industiral value chain analyses above, Woreda planners move on to address more pratical issues by conducting a general study of the area. This study produces:

1) A cartographic map that clearly indicates area features like population density, settlement patterns, land (soil and elevation) and natural resources.

2) An inventory of potential local industries. The United Nations Industrial Classification System (Annex C) and related sources can provide guidance on how to define areas of production specialization. Key questions to address here include: are there market opportunities for industries that are being conceived by Woreda planners? Comparative advantages? Consider the advantage of opening a textile or an oil-processing factory in Chilga near Metema (agricultural zone) or in Dansha near Humera (another agricultural zone). Is the labour market condition favourable? Industrial technologies accessible? It is

not useful to conceive industrial initiatives for which production technologies and skilled labour are not easily accessible.

3) Profile of informal sector activities, if not done as part of the profiling of potential industries (#2 above). Woreda planners should critically assess the potential of different informal sector activities to take up new opportunities. Only those with growth potentials should be considered in the value chain analysis as suppliers, distributors, retailers and so on.

4) An assessment of availability of facilities (land, water, electricity, roads, transport, telecommunication, etc).

5) Opportunities for alternative sources of energy, such as the use of sun light heat and rain water (stored). These energy sources will be especially important for food and beverage industries which consume a lot of water and heat.

6) Review of national laws and regulations (if any) governing factory site specifications such as plant size, plant location, swage treatment and disposal, environmental protection and so on.

The feasibility study can be summarized and packaged into an information kit for local entrepreneurs and foreign investors who would like to know about potential local industries including market opportunities, their locations (proximity to facilities and markets), availability of natural resources, physical conditions in the area (soil, topography and vegetation), labour market conditions (occupational skills and available job training programs), facilities (buildings, roads, communications, water, electricity, etc.) and institutional support from government (information, finances and technical services).

The information kit also serves as a pocket book for Woreda officials who brief potential investors as well as initiate dialogue with regional and federal officials to seek assistance in such areas as choices of production technologies, production engineering and market analysis.

Normally, one would expect that investors would have resources to finance their own market feasibility studies (e.g.opening of a lumber processing plant). Therefore, we should be concerned about the needs of local entrepreneurs who are confronted with multiple capacity constraints, such as information, skills, knowledge, capital and access to institutional resources. For example, consider a rural cooperative which wants to set up a soap, brick, food processing, woodwork or textile factory. Woreda officials should provide this rural cooperative with technical, financial and organizational assistances. The example of the Ethiopian Television documentary referred to previously – the government supporting businesses that were not feasible – also suggests that officials consider judicious approaches of discriminating in favour of local entrepreneurs and investors that demonstrate the willingness and capacity to innovate and perform economically. In the remaining part of this section, we use a proposal for a soap factory

from a rural cooperative as a hypothetical example to illustrate a step-by-step method of industrial project planning.

4.1.2. Project Planning. Assume that representatives of a rural cooperative had attended a seminar that discussed the findings of the latest Woreda industrial feasibility study. These cooperative officals have learned that there are market opportunities for soap products in local and remote areas and so they have decided to set up a soap factory in their locality. You wouldn't expect these rural people to develop a plan for a factory plant, as they do not have the capacity. Instead, they would submit a request to their Woreda government seeking assistance. Up on acceptance of this request, Woreda officials contact the Woreda technical department which in turn mobilizes a planning team to develop a factory project plan containing the following details: project feasibility study, product engineering and operational specifications.

Project feasibility study. This activity should not be confused with the Woreda feasibility study above which was intended to create an inventory of industrial resources and assess the overall climate of national economy. This will be a feasibility study specific to the soap producing firm proposed by the rural cooperative. The planning team then documents and carefully analyzes operational issues, such as:

1) Is land (factory site) available? Topography and soil suitable? For example, rocky areas increase the cost of digging water pipes, swage canals, roads and so on. Factory swage canals on sandy soils allow industrial contaminants to leak out easily into groundwater and rivers, creating health hazards. An outline of a land use management plan (waste treatment and disposal and environmental protection) would be needed.

2) Are facilities (e.g., buildings, roads, communication, electricity and water) available and easily accessible?

3) Choice of appropriate technology. If you choose a simple technology, you are very likely to hire local people to run the factory; otherwise, you must recruit highly trained workers from elsewhere.

4) Value chain analysis. Identify firms that are supliers, distributors and retailors. Are there local input suppliers? If not, where are they located? Do distributors have sufficient capacity (e.g. storage and transportation) to deliver soaps to retailors? Do retailors have adequate customer base to sell soaps? GTZ's value chain analytical model above (Figure 2, p. 17) could also be used here.

5) Government support such as start up capital and technical support and training. For example, are there engineers (government or private sector contractors) to install equipment, train workers and provide repair and maintenance services?

This feasibility study should also include a market forecast (hypothetically speaking) of the production, packaging and distribution of 60,000 units of soap a month (3,000 units of soap a day x five days a week) employing 18 workers. Local and regional demand for

soaps is forecasted on the basis of successful government campaigns that have raised sanitation awareness among the population. The government has also built water facilities,which encourage more sanitary practices. Hence, it is estimated that each of the Woreda's 30, 000 households will consume at least one (1) soap a month at a retail unit price of 1.2 Birr. If the factory distributes soaps to local retailers at a unit price of 0.75 Birr, this generates revenue of 22,500 Birr a month. The rest (30, 000 units of soap) would be distributed to wholesalers out of the Woreda at the same unit price of 0.75 Birr, generating another 22,500 Birr. The soap factory would generate total revenue per month of 45,000 Birr of which 35,000 goes to cover operational expenses (wages and overhead costs) and 10,000 Birr to service loans.

Note that the 18 factory workers spend their money on the other locally produced products and services, so that the money they earn stays in the Woreda. Since business goes where the money is, the Woreda may also attract outside manufacture and service industries to enter the area.

Product engineering. This involves developing and testing the soap product, determining cost per unit of production and packaging, developing quality measurements and other tasks related to product development. It maybe unrealistic to expect the availability of technolgoical and organizational resources for product design and development at the Woreda level. Zonal and regional technical departments should provide support to this Woredas planning team.

Operational speficications. Can the soap factory be put into operation? Woreda planners should provide sufficient details outlining engineering specifications for the construction of factory plant (size, location, facilities, etc.); type of factory equipment and occupation requirements; input supply systems (delivery methods, quantity at delivery and frequency, etc); worker recruitment and training plan; and managerial tasks such as supervision, production scheduling (how much to produce and when) and marketing plan. Here again, higher levels of government technical departments must provide support.

The plan for the soap factory could be summerized and presented to Woreda decision-makers using the format in Table 3 in the next page. Woreda officails would review and appraise the plan in relation to business feasibility and potential for job creation. Once approved, the soap factory proposal gets financial support to build and furnish the factory (equipment, workers and facilities) and the services of engineers, economic advisors and other support staff to put the factory into production.

Table 3. **Soap Factory Plan**	Explanation and remarks
Market analysis	There is local and regional demand for soap, because of government sanitation awareness programs and access to water facilities. Cheaper than soaps produced elsewhere (advantage).
Market forecast	Production, packaging and distribution of 3,000 units of soap a day (60,000 a month) with 18 employees. Estimated local consumption of 1 soap per household per month x 30,000 Woreda households at a unit price of 0.75 Birr to retailors, generating revenue of 22,500 Birr a month. The rest (30,000 units) distributed to wholesalers at the same unit price, generating another 22,500 Birr. Total revenue per month of 45,000 Birr. Wages 25,000 Birr, overhead costs 10,000 Birr, the rest (10,000) to go to loan payment. Potential for more production and economies of scale if markets inside and outside of local areas grow.
Industrial equipment	Equipment must be imported from China (example). Cost estimated 5M Birr.
Labour	At least 18 workers needed: a supervisor, 10 assembly line workers, 2 cleaners, three wards, 1 general manager (with training in financial accounting), 2 drivers and 1 marketer. At least a week of on the job training for assembly line workers required. Training cost estimated 50,000 Birr including equipment installation.
Input supply	A firm identified and supply system evaluated and are ok.
Marketing	Distributors and retail chains identified and their sales capacity assessed. Ok.
Facilities	Land is available (owner compensation of 0.2M Birr). Factory plant must be constructed including water and electricity facilities (cost 2M Birr). Feeder road must be constructed (cost 5 M Birr).
Geological factors	Land in the area is rocky which may cost a lot to build roads, dig water pipes or swage canals. There is land with sandy soil (easy to dig) but industrial contaminants could leak into groundwater, which could be prevented by building concrete swage canals (recommended).
Start up capital	3M Birr for furnishing facilities including office space, salaries, purchase of transport truck and overhead costs.
Challenges	Slow delivery of equipment and tools. Workers may need more time to get familiarized with the machine. Having an engineer around may not be easy.
Government support	An engineer (contractor) and economic advisor and 2 rural development agents available. Financial loan available. Federal and regional bodies helping the search and delivery of appropriate industrial equipment. Access to land, water, electricity and other facilities on cost recovery basis.
Total budget	15.25 M Birr
Timeline	Factor inauguration in 1.5 years.

5. Conclusion

There has been a paradigm shift of development policy thinking that focuses more attention on the transformation of rural economies to diversify household incomes and ensure long-term food security in developing countries. Rural development has resurfaced as a priority in the global development agenda. The Canadian International Development Agency (CIDA) just announced three interrelated priorities –food security, economic growth and children and youth – that would guide its international development assistance programming. The United Nations Industrial Development Organization (UNIDO) has already called for the formulation of policies and sector strategies that support the industrialization of developing economies. All this emanates from the reality that, in countries like Ethiopia, agriculture has exhausted its carrying capacity due to land degradation and population growth. The Chinese realized this structural problem a long time ago and launched a program of rural industrialization (see Annex A). The booming economy in present day China and improvements in the lives of hundres of millions of Chinese citizens provide sufficient evidence of the success of this strategy.

The Ethiopian government should therefore launch a program of rural industrialization aimed at building a rural industrial capability consisting of technology, skilled workforce and government resources. This program should articulate strategic initiatives including:

- The creation of technical and organizational resources for Ethiopian Woreda governments, so that they can support rural industrial growth;
- Technological research and industrial workforce training tailored to the needs of rural industries;
- Promotion of the entrepreneurial role of Woreda government officials;
- The creation of rural-urban sectoral linkages (through industrial value chains); and
- The revival of the informal/traditional sector of the Ethiopian economy.

This paper does not attempt to prescribe policies or strategies to the Ethiopian government. It is only intended as a Diaspora contribution to the understanding of one development strategy – rural industrialization – as a means to fight rural poverty. Therefore, it is recommended that:

1) The Ethiopian government uses this paper as an input to the 2010-2015 national development plan (successor of PASDEP) to formulate multi-sector strategies in support of rural industrialization; and

2) The government considers the rural industrial planning method presented in this paper as model to design an industrial planning tool including a training program for Woreda, zonal, regional and federal government officials.

6. Annexes

A. Brief Overview of Rural Industrialization in China

China is still a developing country which ranks 94th in the United Nations Development Program human development index. At the centre of the heated debate on China's extraordinary economic growth is whether or not this growth could be sustained over time. There are also other issues related to the political, distributional, environmental and other consequences that often accompany a rapid economic growth. The scope of this brief overview is confined to identifying relevant lessons in the context of rural industrialization.

To start with, the economic policy of the Chinese Community Party began tilting in favour of rural areas following the abandonment of the Soviet style centralized urban-focused planning in 1957. This change of policy aimed at the simultaneous development of both agriculture and industry by articulating five strategic sectoral relationships: "(1) industry and agriculture, (2) heavy industry and light industry, (3) large enterprises and medium-to-small enterprises, (4) modern production methods and indigenous methods, and (5) enterprise run by the central government and those run by local authorities" .[20] The idea was to achieve the mutual reinforcement of investment results in infrastructure, education, technology and other areas. An example would be scaling up traditional rural industries by providing modern technologies and facilities like water and electricity. While central government agencies oversaw the implementation of directives for these five strategies, planning responsibilities were transferred to local officials. This arrangement would decentralize industrial planning and avoid the concentration of industrial growth in major cities.

At the local level, the industrial planning practice appears to have considered a hierarchical organization of production. Hence, heavy industries, located in county capitals, employed advanced technologies to produce coal, iron, cement, steel, chemicals, machineries and other capital goods. Light small and medium industries were concentrated in communes (villages and rural towns) and they employed simple technologies to produce consumer goods and provide agricultural services. The counties and communes also run other labour intensive activities such as construction of schools, roads, irrigation systems, terraces, reforestation and management of hydraulic stations. Overall, industries run by communes employed no more than 100 workers and those run by counties no more than 200 workers. While county-run industries had government legislated wage scales, and in some instances modified wages, the communes employed a "work point" system.[21]

In spite of such systemic thinking and planning, the efforts did not trigger a rural economic transformation. The main reason was that, under the commune (collecitve) system, the Chinse state gave farmers production quotas, decided what they needed for their consumption and took the rest. Farmers saw no benefits in producing more than

[20] John Sigurdson. *Rural Industrialization in China*, 1977, p. 8.
[21] Ibd.

their quotas, so that growth in agricultural production remained stagnant. Moreover, too much bureaucratic interference in production decisions and low worker motivation made state-run industries inefficient. Reform was inevitable.

In 1981, the Communist Party announced the Household Responsibility System which allowed individual farmers to contract out state land, fulfill their production quota obligations under the old system and sell the surplus in open markets with good prices. The central state and local governments still remained committed to providing support to farmers in the form of capital, technology and market services. The result was a dramatic increase in production and household income.

The second aspect of the reform was the transfer of responsibilities for the management of state-owned enterprises to local governments, which in turn hired competent mangers, who could run them profitably. They collected taxes, sent a certain portion to the next level of government and retain the residual. They were also allowed to give out cash bonuses for successful factory managers and local communist cadres who played a supportive role for local industries by finding markets and promoting local products. According to Jean Oi, "linking cadre bonuses to the size of the residual [profit] gave local officials a direct stake in economic growth". And "although villages were not subject to the revenue sharing system, the salary of officials were similarly affected by their economic performances. In fact, both their salaries and bonuses were directly tied to the collective's total income".[22]

Local governments also encouraged and supported the creation of new enterprises organized collectively or individually. To illustrate, township and village groups and private entrepreneurs would come up with proposals containing ideas of entrepreneurial initiatives and seek the assistance of local governments. Their proposals would undergo rigorous reviews and appraisals under economic criteria such as profitability, job creation and alignment with government growth goals. Once proposals were approved, local governments provided assistance in the form of finance (loans, grants and subsidies) and in obtaining production equipments and market information, as well as access to cadres who would go around promoting local products and arranging buyers. Samuel Ho and Y. Kueh's study identifies 26 funding mechanisms created by different levels of government to support local industries, equally divided between equity funds and debt funds including retained savings, new investments, credits, loans, "salary payables" (deferred wage payments), commercial credits, voluntary contributions and corporate bonds.[23]

Most small village and private enterprises preferred to take their orders from state-owned enterprise, in order to minimize market risks such as inability to break through markets and price instability. Jean Oi illustrates one such example using a rural sofa-frame factory:

[22] Rural *China Takes Off: Institutional Foundations of Economic* Reform, 1999, pp. 49-50.
[23] S*ustainable Economic Development in South China*, 2000.

> The private entrepreneur who owned the factory did not have to worry about supplies, designs or the retailing of his products. He simply produced the sofa frames and delivered them to a nearby large collective [state] enterprise, with which he had contracted to make the frames. The physical plan, workers, hours, conditions, and wages were his responsibility. But the price of the goods, the provision of materials, and the amount to be produced were determined beforehand by the terms of his contract with the collective factory.

And,

> As the sofa maker became more successful, the small producers in the village became his subcontractors. He provided his neighbors with the market and expertise needed to break into a rather profitable profession… By 1991 there was a total of ten household factories in the village – three large ones (each employing over thirty people) and seven smaller ones – producing sofa frames. The original sofa-frame maker collected the frames made by his neighbors and sold them, along with his own frames, to the collective in the nearby large city. The ability of this entrepreneur to help his neighbors was enhanced by the fact that he also happened to be a village official…. [24]

By the 1990s, a mixed economy had emerged with the total number of enterprises growing to nearly 8 million (in 1996), from 377,000 in 1980. In the same period, state enterprises would grow from 83,000 to 1.1 million, collectively owned township and village enterprises from 293,000 to 1.6 million, shareholding and foreign-owned firms from 400 to 70,000 and privately owned firms from 3.3 million (in 1985) to 6.3 million.[25] According to one IMF paper, by 2006, the share of exports and imports by state enterprises had significantly decreased, while that of private sector increased, indicating the expansion of the role of private sector in the Chinese economy.[26]

To conclude, the Chinese experience of government-led economic growth is not necessarily a new phenomenon, as there have been successful government interventions in history like in those other East Asian countries. What is unique about the experience of China is that local governments were responsible for leading and facilitating economic growth. This is perhaps one of the most important lessons for Ethiopia.

[24] Ibd.
[25] Gary Jefferson and Inderjit Sngh (eds.). E*nterprise Reform in China: Ownership, Transition, and Performance*, 1999.
[26] IMF. *China's Changing Trade Elasticities, (by* Johangir Aziz and Xiangming Li*)*, November 2000.

B. List of Ethiopian Firms (taken from Mbendi Information Services, http://www.mbendi.com/land/af/et/p0005.htm) (This information is presented for illustration purpose and does not entail that the firms are currently in existence).

Industry

1. Agriculture
Ethiopian Livestock And Meat Corporation
Finchaa Sugar Factory
Gent Adala Bee Wax Manufacture
Metahara Sugar Factory
Natural Gums Processing And Mktg Enterprise
Wonji Shoa Sugar Factory

2. Mining
Ahmed Abdo Mohammed Gold Enterprise
Alfreds Mineral, Water & Energy Development Pvt Ltd Company
Asterial SRL
Blue Nile International Mining Company Pvt Ltd
Canyon Resources Africa
Ethiopian Mineral Development Share Company
Ethiopian Mineral Resources Development Corporation
Ethio-Libyan Joint Mining Company
Ezana Mining Development Plc
Grand Crescent Company
Midroc Legadembi Gold Mine
National Mining Corporation
Roraima Mining Co Ltd
Western Wellega Gold Exploration and Development

3. Oil and Gas
Agip (Ethiopia)
Anadarko Petroleum Corporation - Ethiopia
Ethiopia Hunt Oil Company
Ethiopian Oil & Gas Exploration & Development Corporation
Ethiopian Petroleum Corp
Kalub Gas
Ministry of Mining and Energy
Mobil Oil East Africa Ltd.
Pennzenergy
Shell Ethiopia Ltd
TOTAL Mer Rouge SA (Ethiopia)
Veba Oil and Gas

4. Manufacturing
Addis Soft Drink Factory
Addis Car Battery Factory
Addis Garment Factory
Adei Abebe Yarn Factory
Akaki Spare Parts & Tools Factory
Afdera Salt Works Association
Ashraf Industrial Group PLC
Awash Winery
Bagersh SA
Cement Products Industry

Dil Edible Oil PLC
Dire Dawa Food Complex SC
Duck Table Salt Processors
Ethiopia Amalgamated
Ethiopian Beverages Corp
Ethiopian Coffee Marketing Corporation
Ethiopian Food Corporation
Ethiopian Fruit And Veg Mrktg Enterprise
Ethiopian Oil Seeds And Pulses Export Corporation
Ethiopian Spice Extraction Factory
Ethiopian Sugar Corp
Ethiopian Pulp & Paper SC
Ethio-Japanese Synthetic Textiles
Ethiopian Cement Corporation
Ethiopian Handicrafts And Small-Scale Ind Dev Agency
Ethiopian National Metal Works Corp
Faffa Foods S C
Giuseppe Pasqua Pvt Ltd General Metal Works
Guder Agro Industry PLC
Hagbes Pvt Ltd
Iacona Engineering Pvt Ltd
Jamaica Shoe Factory
Kalati Foods SC
Khan Industries PLC
KOJJ Food Processing Complex
Kokeb Flour and Pasta Factory
Mekiya Enterprise
Misrak Flour & Bread Factory
Molla Marou Liquor Factory Pvt Ltd
Mulat Abegaz Edible Oil Factory
Muzein & His Children PLC
National Leather And Shoe Corp
National Textiles Corp
Palm and Salt Association
Tea Development & Marketing Enterprise
Tana Pvt Ltd Co
TK Manufacturing Company
Universal Food Complex
Wabe Shoe & Sole Factory Pvt Ltd

5. Chemicals
Ethiopia Plastic Factory
Ethiopian Chemical Corp
Ethiopian Pharmaceuticals And Medical Supplies Corporation
Kadisco Chemical Industry

6. Building, Construction and Engineering
Khan Industries PLC
Tanya Engineering Pl Co
Agicultural Equipment & Technical Services Enterprise

7. Automotive
Khan Industries PLC
Automotive Manufacturing Co of Ethiopia
Ethiopia Amalgamates
Ultimate Motors Pvt Ltd Co

8. Public Utilities
Ethiopian Electric Power Corporation
Ethiopian Rural Energy Development and Promotion Centre

Services

9. Chamber of Commerce
Ethiopian Chamber of Commerce and Industry

10. Financial Services
Addis Trade Credit Enterprise PLC
Agricultural & Industrial Development Bank
Awash International Bank S.C.
Bank of Abyssinia
Commercial Bank of Ethiopia
Construction and Business Bank
Development Bank of Ethiopia
Ethiopian Import And Export Corporation
Ethiopian Insurance Corporation
Ethiopian Investment Authority
Ethiopian Investment Office
Ethiotrade.Com (Allied Ethiopia Trading)

12. Professional Services
Addis Ababa University
Bromhead & Thomas
Ethiotrade.Com (Allied Ethiopia Trading)
Intellectuall Property Safeguard Organization
Teshome Gabre-Mariam Bokan Law Office

13. Transport and Storage
Green International Logistic Services
Admas Air Service Inc
Ethio-Djibouti Railway
Ethiopian Airlines
Ethiopian Freight Transport Corporation
Ethiopian Shipping Lines
Kuehne & Nagel (Ethiopia)
Maritime & Transit Service Enterprise
Packtra Pvt Ltd
Public Transport Corporation

14. Trading
Agricultural Inputs Supply Corporation
Agricultural Marketing Corporation
Almeta Impex (Pvt) Ltd Co
Berhane Developments
East African(Eth) Ltd
Ethio Automotive & General Trading
Ethiopian Coffee Export Enterprise
Ethiopia's Coffee and Tea Development Authority
Ethiopian Commodities Pvt Ltd Co
Ethiopian Fruit & Vegetables Marketing Enterprise
Ethiopian Import And Export Corporation
Ethiopian Livestock And Meat Corporation

Ethiopian Oil Seeds And Pulses Export Corporation
Ethiotrade.Com (Allied Ethiopia Trading)
General Chemical & Trading Pvt Ltd
Guna Trading Houses Co
Markget International
Mekwor International
Merchandise Wholesale & Import Trade Enterprise
Nile International Trading Pvt Ltd Company
Rahel Legesse General Import and Export

15. Wholesale and Retail
Emadco
Ethio-Nippon Tech Co Ltd
Ethiopian Domestic Distribution Corporation
Ethiopian Household & Office Furniture Enterprise
Ethiopian Retail Trade Corporation
Gaky Engineering & Automotive
Kotari, JJ & Co (Eth) Ltd
Oda Share Company Pvt Ltd
PC House
Philips Ethiopia
Ultimate Motors Pvt Ltd Co

16. Real Estate
Huda Real Estate Private Limited Company
Mekwor International

17. Computers and Communications
InfraCom Services Plc
African Lakes (Ethiopia) PLC
Bureau for Electronic Computer Services
Concat Pvt Ltd Company
Equatorial Business Group PLC
Ethiopia Telecommunications Corporation
Infotec PLC
Maxina Ltd
PC House

18. Travel, Tourism and Recreation
13 Suns Tours
Addis Ababa Hilton International
Avis (Ethiopia)
Eastern Travel & Tourist Agency
Ethiopia Hotels Enterprise
Fest Ethiopia Travel & Tour Company
Kibran Tour and Travel Ethiopia
Roha Tours
Solomon Berhe Tours

C. UN Industrial Classification System (http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=27&Lg=1, retrieved on January 31, 2009).

I. Mining and quarrying

1. Mining of coal and lignite
2. Extraction of crude petroleum and natural gas
3. Mining of metal ores
4. Other mining and quarrying
5. Mining support service activities

II. Manufacturing

6. Manufacture of food products
7. Manufacture of beverages
8. Manufacture of tobacco products
9. Manufacture of textiles
10. Manufacture of wearing apparel
11. Manufacture of leather and related products
12. Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
13. Manufacture of paper and paper products
14. Printing and reproduction of recorded media
15. Manufacture of coke and refined petroleum products
16. Manufacture of chemicals and chemical products
17. Manufacture of basic pharmaceutical products and pharmaceutical preparations
18. Manufacture of rubber and plastics products
19. Manufacture of other non-metallic mineral products
20. Manufacture of basic metals
21. Manufacture of fabricated metal products, except machinery and equipment
22. Manufacture of computer, electronic and optical products
23. Manufacture of electrical equipment
24. Manufacture of machinery and equipment n.e.c.
25. Manufacture of motor vehicles, trailers and semi-trailers
26. Manufacture of other transport equipment
27. Manufacture of furniture
28. Other manufacturing
29. Repair and installation of machinery and equipment

III. Electricity, gas, steam and air conditioning supply

30. Electricity, gas, steam and air conditioning supply

IV. Water supply; sewerage, waste management and remediation activities

31. Water collection, treatment and supply
32. Sewerage
33. Waste collection, treatment and disposal activities; materials recovery
34. Remediation activities and other waste management services

V. Construction

35. Construction of buildings
36. Civil engineering
37. Specialized construction activities

VI**. Wholesale and retail trade; repair of motor vehicles and motorcycles**

38. Wholesale and retail trade and repair of motor vehicles and motorcycles
39. Wholesale trade, except of motor vehicles and motorcycles
40. Retail trade, except of motor vehicles and motorcycles

VII. Transportation and storage

41. Land transport and transport via pipelines
42. Water transport
43. Air transport
44. Warehousing and support activities for transportation
45. Postal and courier activities

VIII. Accommodation and food service activities

46. Accommodation
47. Food and beverage service activities

IX. Information and communication

48. Publishing activities
49. Motion picture, video and television programme production, sound recording and music publishing activities
50. Programming and broadcasting activities
51. Telecommunications
52. Computer programming, consultancy and related activities
53. Information service activities

X. Financial and insurance activities

54. Financial service activities, except insurance and pension funding
55. Insurance, reinsurance and pension funding, except compulsory social security
56. Activities auxiliary to financial service and insurance activities

XI. Real estate activities

57. Real estate activities

XII. Professional, scientific and technical activities

58. Legal and accounting activities
59. Activities of head offices; management consultancy activities
60. Architectural and engineering activities; technical testing and analysis
61. Scientific research and development
62. Advertising and market research
63. Other professional, scientific and technical activities
64. Veterinary activities

XIII. Administrative and support service activities

65. Rental and leasing activities
66. Employment activities
67. Travel agency, tour operator, reservation service and related activities
68. Security and investigation activities
69. Services to buildings and landscape activities
70. Office administrative, office support and other business support activities

XIV. Public administration and defence; compulsory social security

71. Public administration and defence; compulsory social security

XV Education

72. Education

XVI. Human health and social work activities

73. Human health activities
74. Residential care activities
75. Social work activities without accommodation

XVII. Arts, entertainment and recreation

76. Creative, arts and entertainment activities
77. Libraries, archives, museums and other cultural activities
78. Gambling and betting activities
79. Sports activities and amusement and recreation activities

XVIII. Other service activities

80. Activities of membership organizations
81. Repair of computers and personal and household goods
82. Other personal service activities

XIX. Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use

83. Activities of households as employers of domestic personnel
84. Undifferentiated goods- and services-producing activities of private households for own use

XX. Activities of extraterritorial organizations and bodies

85. Activities of extraterritorial organizations and bodies.