CHALLENGES AHEAD FOR TANZANIA TO BUILD NEW CAPACITIES FOR GAS INDUSTRY DEVELOPMENT

By Col. (Retd) J.L. Simbakalia
(Regional Commissioner of Mtwara)

ESRF DISCUSSION PAPER No. 51

The Economic and Social Research Foundation (ESRF)

2013

www.esrftz.org

CHALLENGES AHEAD FOR TANZANIA TO BUILD NEW CAPACITIES FOR GAS INDUSTRY DEVELOPMENT

By
Col. (Retd) J.L. Simbakalia
(Regional Commissioner of Mtwara)

ESRF Discussion Paper No. 51

Published By: Economic and Social Research Foundation
51 Uporoto Street (Off. Ali Hassan Mwinyi Rd.) Ursino Estate
P.O. Box 31226, Da es Salaam
Tel: (+255) 22 2760260,
Mobile: (+255) 754280133
Fax: (+255) 22 2760062
Email: esrf@esrf.or.tz
Website: www.esrftz.org

ISBN: 978-9987-610-85-3

TABLE OF CONTENTS

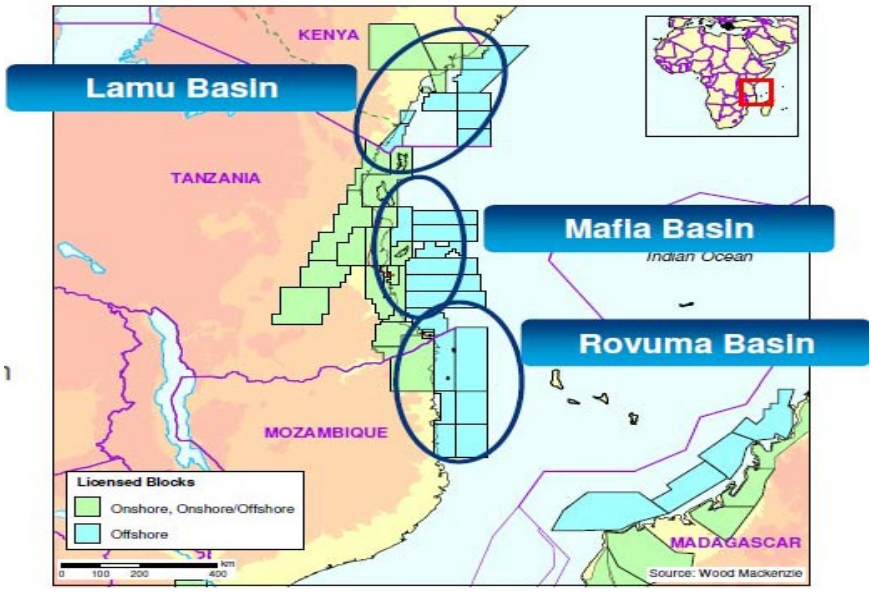
ABSTRACT

Exploitation of natural gas resources discovered onshore and offshore the Ruvuma and Mafia basins will create opportunities for Tanzania to build a new economy. Hitherto, the economy has been based on agriculture, mining, tourism, as well as light manufacturing and processing, as lead production sectors. Other economic activities such trade, financial services, engineering, construction and transportation are linked with those key sectors to provide comprehensive growth. The development of natural gas and associated industries should provide further impetus to growth; but in order to do so in a sustainable manner, it will demand requisite enabling environment of appropriate policies, legal and regulatory framework, physical infrastructure, as well as human and institutional capabilities. All this will create new challenges for the management of both the macroeconomic system and public revenue administration.

This current Discussion Paper (DP) examines the preparedness of Tanzania to host the new gas economy in the above perspective.

1.0 INTRODUCTION

During the last few years, Tanzania has attracted a great deal of global attention following the discovery of huge reserves of natural gas in Mafia and the Rovuma Basins (see MAP), areas that straddle the common territorial border shared between Mozambique and Tanzania[1].



The resource estimate of natural gas discoveries in Tanzania now exceeds 40 tcf, and is likely to go up significantly as more drilling campaign intensifies. The first discovery of natural gas in Tanzania in volumes of commercial significance was made in 1974 at Songosongo in Lindi Region. Then the resource was estimated as 1 – 2.5 tcf. In 1982, more discoveries were made at Mnazi Bay in Mtwara Region and the estimates of that field stand at 3 – 5 tcf. Currently, Tanzania has more than a dozen onshore and shallow water discoveries and production wells in these areas with total resource estimate of up to 7.95 tcf.

However, largely due to infrastructural constraints required to facilitate domestic market off take, the potential impact to the economy of both upstream and downstream developments linked to the reserves remains modest. The Songosongo and Mnazi Bay reserves face a number of constraints to produce gas fuel for power generation and industrial use, as an environmentally friendly substitute to the more costly imported furnace oil and diesel.

1.1 Latest Global Frontier of Hydrocarbons Discoveries

The eastern seaboard of Africa is dubbed "The Latest Global Frontier of Hydrocarbons Discoveries" with intensifying exploration activities onshore and offshore. The region extends widely, covering Sudan, Ethiopia, "Greater Somaliland", Kenya, Uganda, Tanzania, Mozambique and Madagascar. During the past 5 years or so, Tanzania and neighbouring Mozambique have attracted substantial investments particularly in offshore exploration for

1 *Deutsche Bank East Africa Report – Exploration in East Africa, May 2011*

the hydrocarbons[2].

In Tanzania, the operations are coordinated by the Government of Tanzania (GoT), acting through Tanzania Petroleum Development Corporation ("TPDC"), and include BG Group, Statoil, Exxon Mobil, Petrobras, as well as a relatively unknown and industry newcomer Ophir. Between October 2010 and January 2013, BG Group and Ophir drilled a total of 9 discovery wells with a total resource estimate of 17.87 tcf. Statoil operating in partnership with Exxon Mobil drilled a total of 5 discovery wells between January 2012 and June 2013 with a total resource estimate of 15.9 tcf[3] (Table-1).

Table 1: Tanzania Offshore Natural Gas Discoveries by Statoil/Exxon Mobil

WELL NAME	DISCOVERY DATE	WATER DEPTH (M)	DISTANCE FROM SHORE (KM)	NET SANDS (M)	GAS RESOURCE ESTMATE (TCF)
Zafarani-1 BLOCK -1	March 2012	2591	30	120	6.0
Zafarani-2 BLOCK -2	February 2013	2389	32		0.5
Lavani -1 BLOCK – 2	June 2012	2397	32	95	3.0
Lavani-2 BLOCK -2	December 2012	2580	30	85	1.4
Tangawizi-1 BLOCK- 2		2269	32		5.0

Source: Ministry of Energy and Mineral (MEM)

Tables 2 shows the discoveries made by BG/Ophir, while Table 3 shows the locations of on-shore discoveries .

Table No.2: Tanzania Offshore Natural Gas Discoveries By BG/Ophir

WELL NAME	DISCOVERY DATE	WATER DEPTH (M)	DISTANCE FROM SHORE (KM)	NET SANDS (M)	GAS RESOURCE ESTMATE (TCF)
Pweza - 1 BLOCK - 4	October 2010	1402	38		1.7
Chewa - 1 BLOCK - 4	November 2010	1312.8	32		1.8
Papa - 1 BLOCK - 3	July 2010	2138	119	39	2.0
Chaza - 1 BLOCK - 1	February 2011	1313	38		0.47
Jodari - 1 BLOCK - 1	January 2012	1163	46	132.8	4.1
Jodari North - 1 BLOCK - 1	December 2012	1243	46	32.4	4.1

2 *Ministry of Energy and Minerals – Gas Discoveries Reported up to May 2013. Figures based on a Hypothetical Model of gas utilization options in a study commissioned by Regional Commissioner of Mtwara and conducted by an International Consultant.*

3 *"Economics of Development" by A.P. Thirwall – 9th edition (2011); reference Chapter 3 on "Characteristics of Underdevelopment and Structural Change" which cites the work of Goulet, Armatya Sen, Kaldor and Rostow as scholarly authority on the subject.*

Jodari South - 1 BLOCK - 1	November 2012	1040	46	60	4.1
Mzia - 1 BLOCK - 1	May 2012	1639	46	66	8.7
Mzia - 2 BLOCK - 1	January 2013	1622	60	82	8.7

Total Resource Estimate for BG /OPHIR 17.87 TCF

Table No.3: Tanzania Onshore Natural Gas Discoveries/Production Wells

(NB. Total Onshore Gas Resource Estimates 4.45 – 7.95)

DISCOVERY/ PRODUCTION WELL NAME	OPERATOR	DISCOVERY DATE	GAS RESERVES (BCF)	GAS RESOURCE ESTMATE (TCF)
S4,S7,S10 (Songosongo)	Pan African Energy	1974	880	1-2.5
MB1, MB2, MB3, MS-X1 (Mnazi Bay and Msimbati)	Maurel et Prom	1982	262	3-5
Mkuranga -1	Maurel et Prom	2007		0.2
Kilimani - 1	Ndovu Resources Limited	2008		0.07
Ntorya -1	Ndovu Resources Limited	2012		0.178

The flurry of activities point to likely substantial investments upstream as well as downstream that will create opportunities for commercial activities to add value to the gas reserves or as spinoffs thereon.

2.0 OUTLOOK AND POTENTIAL OF THE NATURAL GAS ECONOMY

2.1 Prospects for the Natural Gas Economy

Tanzania has a variety of endowment of mineral resources which include gold, diamonds, coal, iron, titanium, uranium, nickel, copper, soda ash and natural gas. However, currently the mining operations predominate, and for the lack of risk capital involved and lack of the capacity to employ the appropriate technologies required in the exploration and development of mineral resource extraction ventures, there is undue foreign dependency in operating these operations.

The exploration, development and operation of gas fields is inherently risky as well as capital intensive; and even more so when the recovery of natural gas is located offshore in the deep sea. Since domestic demand for natural gas is still very small in relation to the total volumes of gas produced, the bulk of the gas must be sold overseas in order to recover the risk capital invested during the exploration and development phases of the projects.

2.2 Role of Foreign Direct Investment

In practical terms, it all means that, initially substantial volumes of foreign direct investments had to flow into Tanzania to exploit the natural gas reserves. Subsequently it will be necessary to build export capacity to facilitate feign exchange earnings so as to pay back the foreign investments made in the risk capital that went into exploration, while more captital will have to be spent in gas fields development as well as in building the associated production infrastructure.

Furthermore, commercial operations of the gas wells will require logistics and support services which will initially be supplied from outside Tanzania, given the situation of lacking adequate local capacities. The discovery of natural gas made onshore and offshore Mtwara and Lindi regions has occurred in regions which are undeveloped in terms of the basic physical infrastructure required to accommodate and support the operations and commercial activities of a modern, world class gas industry. These regions currently lack the economic services infrastructure to match with the activities of major industrial operations. They also lacksocials services and facilities, such as housing and recreation facilities, hotel and office accommodation, shopping centres, restaurants and other social amenities including the essential health and education services. Local capacity to provide these services and facilities is likely to be overstretched and will need strong government effort to attract foreign interests to make the necessary supplements.

2.3 Natural Gas Commercialization Options

As seen before, the typical natural gas commercialization option demands that a substantial part for the output be supplied to world energy markets. Using the ruling industry capital costs of similar projects as a yardstick, a hypothetical model pioneer two-train Liquefied

Natural Gas ("LNG") plant built in Mtwara with capacity to produce 5 MMTPA for export will require capital investments of the order of US $ 10 billion. It will consume about 7.4 tcf in 25 years (*requiring an annual natural gas consumption of 5.2 MMTPA*). The corresponding export receipts would be of the order of up to US $ 5 billion per annum. The export receipts can be expected to more than double, since the natural gas reserves are substantially much more than what is required for the expansion of LNG production to double the "two-train" capacity, as well as to accommodate other natural gas utilization options such as Gas-to-Liquids (GTL) and Gas-to-Urea and Ammonia industries. Investments in the other gas utilization options could attract aggregate investments of the same order of magnitude[4].

Therefore, assuming successful appraisal of the discovery gas wells with significant stocks of natural reserves; and further assuming positive techno-economic feasibility and commercial sustainability of projects to exploit the gas at market prices, the large investments required in creating the platform for natural gas exploitation with its attendant logistics, supporting services and infrastructure for export will dwarf Tanzania's inflows of foreign direct investment (FDI). The large FDIs required to build the natural gas industry ***de novo*** upstream and downstream in Tanzania will, necessarily and unavoidably, alter the structure of the prevailing economy; and henceforth create the new economy driven by the exploitation of natural gas. This will reset the pace of growth of the national economy and accelerate realization of the Tanzania Development Vision 2025 (TDV 2025).

This positive outlook in investment linked to natural gas exploitation invites the pertinent question as to whether the economy of Tanzania has the preparedness necessary to accommodate the new natural gas economy. Preparedness includes foremost effective local participation, in terms of the various capacities needed to enable and facilitate the development of a globally competitive gas sector with its necessary services and linked downstream industries. In this regard, capacity also refers to effective macro-management of the development process to match with the unprecedented quantum of growth of the new economy, fueled by substantial fiscal revenues and foreign reserves, alongside with the attendant social and bio-physical environment impacts.

4 *"Economics of Development" by A. P. Thirwall – elaborating on "Capital Accumulation, Technical Progress and Techniques of Production" in chapter 7 (Part II – under "Factors in the Development Process".*

3.0 TANZANIA'S PREPAREDNESS TO ACCOMMODATE THE NEW GAS ECONOMY

3.1 Addressing General Weakness of The Economy

In order to realize the economic potential of Tanzania basing on its natural resources, several fundamental challenges will have to be addressed. Seven generic "**cardinal lacks**" characterize the general undervelopment of the economy, namely[5]:

1. The **lack of developed domestic markets:** as the base of initial conditions to establish the foundations of a sustainable national economy based on natural resource exploitation. In order to boost opportunities for the exchange of domestically manufactured goods and natural resources, it will be necessary to enhance access to external markets by means of international trade;

2. The **lack of know-how:** this challenge concerns requisite level of knowledge, competencies and experience to successfully exploit the natural resources and manage the flowing benefits thereof. It is important to create a critical mass of human capital of such quality that would enable generation of wealth, as well as facilitate shared growth;

3. The **lack of technology:** technology is a key factor in transformative development to realizing the potential that is locked in natural resource endowment as well as to add value and create wealth;

4. The **lack of an industrial base:** lack of such a base with capacity to domesticate the "natural gas boom" would stifle the establishment of vertical and horizontal linkages in the economy. The natural gas "boom" has to incite establishment of such business activities in which the role of local industries and other business enterprises would be to supply the local content of inputs and various support services as well as the essential skills for the new development situation;

5. The **lack of finance capital:** new capital is a critical ingredient in the exploitation of natural resources and the related value chain industries, as well as to finance the building of the requisite essential infrastructure;

6. The **lack of "know-why in natural resource and environment economics":** this is fundamental and manifests in terms of the lack of having a good understanding of the operations and dynamics of the markets for the various natural resources. The "know-why" is demonstrated for instance in considering the options and trade-offs to achieve the most efficient resource allocation, with a view to maximize returns to society with respect to the economic value for resource extraction and utilization. Furthermore, the question of "know-why in natural resource and environment economics" is a basic requirement for creating the capacity to negotiate win-win international contracts for

5 *"Economics of Development" by A. P. Thirwall – describes the "The Curse of Natural Resources" in chapter under "Characteristics of Underdevelopment and Structural Changes".*

resource exploitation, as well as to identify, define, and inform on the priority and critical areas for research and design of a national investment program in human capital.

7. The **lack of institutional development:** this pertains to the capability of institutions to organize themselves in structures, working procedures and human resources to develop competency over time to manage, regulate and underpin the socioeconomic transformation. Organizations responsible for regulating the Oil and Gas Industry, for enforcement of contracts and property rights, for regulating banks and the financial services sector, for managing and/or controlling fiscal and monetary resources and policies, for regulating capital markets, and for protecting the environment, all need to develop institutional capacities commensurate with the challenges of performing their functions and delivering services efficiently to match the demands which will be imposed by the new and dominant gas economy.

3.2 Attracting Investment in the Natural Gas Sector

The seven generic **"cardinal lacks**" outlined above, in effect characterize, in broad terms, the anatomy of the key factors that constrain socioeconomic development in Tanzania. In other words, they hinder fruitful exploitation of the abundant natural resource endowment.

The "cardinal lacks" , actually spell out what needs to be overcome in order to succeed in building the requisite human, financial and other capacities wanted to effectively establish, operate and manage the gas economy. Certain positive outcomes can be expected when the above constrains are addressed right from the preparedness stage, for example: enhanced *investments, revenues, growth and employment*. Even then, the country should be prepared also to address the inevitable negative outcomes, such as, by being ready to cope with the inevitable (*e.g. rapid urbanization and cultural impact*) and to accommodate or mitigate the unavoidable (*e.g. bio-physical environment impact*).

4.0 MACRO AND SOCIAL SETTINGS FOR ACCOMODATING THE GAS ECONOMY

4.1 The Macro Setting

The setting that needs to be put right for accommodating the gas economy in Tanzania, includes market conditions, environmental constraints and appropriate technology, all playing together to determine the commercial viability of resource extraction, to attract (or hinder) large volumes of investments as well as to realize substantial revenue earnings. In fact these conditions are applicable worldwide**,** and Tanzania will be no exception. The exploitation of natural gas comes with inherent potential for creating opportunities to generate wealth and bringing prosperity for the host country, provided the host nation has the requisite enabling environment, as well as the capacity to absorb the large inward flows of investments and to integrate the new gas industry within its economy.

In that regard, the key factors which will attract investment flows and minimize the risk of doing business in natural resource exploitation, include provision of the essential enabling policy environment with an investor-friendly legal and regulatory framework, as well as the requisite physical infrastructure for business efficiency. However, adaptive capacity and adaptive efficiency of the economy are the two basic and necessary conditions for being able to integrate the gas economy in order to realize maximum long term benefits to accrue to the host Country[6].

4.2 Quality and Size of the Human Infrastructure

The quality and size of the human infrastructure will determine the adaptive efficiency of the economy in terms of technology assimilation and skills transfer. In the same objective, the size and sophistication of the business infrastructure will determine the adaptive efficiency of the host economy to integrate with the new business ventures created by waves of investment inflows to extract natural resources and to create downstream industries, as well as to provide all sorts of supporting services upstream and downstream.

On the other hand, the assessment of the preparedness of Tanzania to host the prospective new gas economy, has also to consider the current state of the INVESTMENT CLIMATE. This embodies a variety of elements: i.e. the policy, legal and regulatory frameworks, human capacities in terms of industry skills, the business infrastructure to provide local content in terms of material supplies, engineering services, logistics and other supporting services; as well as the requisite physical infrastructure of public utilities, transportation, communication, accommodation, social services delivery and recreation amenities.

4.3 Expectations for Transformative Development

Typically, in poor countries like Tanzania where there are proven reserves of natural resources, expectations for transformative development arise and generate thoughts of never-ending

6 "Environmental and Natural Resource Economics", Fourth Edition 1996 – Tom Tietenberg

opportunities to create wealth which will bring about the end of income poverty in the country.

However, the great expectations are accompanied by concerns regarding the risks of falling into the trap of negative social impacts of the newly found wealth experienced in other developing countries. Recall is made on manifestations of "Resource Curse", a phenomenon of conflicts, plunder, waste, and environment degradation[7] resulting from mishandling the rich resources found. Such expectations and fears should be evoked in evaluating the overall preparedness of Tanzania to host the gas economy. It compels due consideration to the "soft issues" of the social setting. The short narrative below is intended to briefly highlight on the relevant issues on this matter.

7 *Tom Tietenberg – describing the concept of "dynamic efficiency" in resource allocation; from chapter 2 under "Economics of the Environment: An Overview". Reference book "Environmental and Natural Resource Economics"*

5.0 PROTECTING THE PHYSICAL ENVIRONMENT AND MANAGING RISKS

5.1 Responsible Management of the Environment

Natural resources such as oil and gas are not only highly valuable in terms of revenue earnings, they are also depletable. The fact that the extraction of oil and gas will lead to their depletion and not be replenished, raises the important issues concerning inter temporal management (i.e. considering inter-generational benefits). The key issue is to ensure that resource exploitation pays heed to conservation and sustainability, such that resource use by the present generations will not prevent future generations from enjoying a comparable level of benefits from the value created [8]. This is where the issue of environment comes in.

The extraction of hydrocarbons as well as their downstream linked industries carry notable environment hazards and other risks. Currently, most of the hydrocarbon exploration activities in Tanzania are taking place offshore in the Indian Ocean and that is where large discoveries of natural gas have been made. It is important to highlight that the Mafia Basin and the Rovuma Basin are both areas of rich marine resources, including the marine parks of Mafia Island and Mnazi Bay which is contagious with the Ruvuma estuary area. Hence, it is imperative to ensure responsible management of the environment, with a view to avoid irreparable ecological damage to the fragile marine resources, in the course of hydrocarbons exploration and subsequent exploitation. The acquisition of sound knowledge of the environment and resource economics is a necessary requirement in order to have the capacity to determine how to achieve a balance between preservation and use of an environment asset, with a view to maximize the present value of that asset over time[9].

5.2 Private Sector Participation as Investor and Operator

The existing structure of property rights under a typical Production Sharing Agreement (PSA), which governs the Public-and-Private-Partnership (PPP) arrangements for natural gas exploitation in Tanzania, appears to be neither the best nor the most efficient. This is pertinent in considering resource ownership, the sharing of costs and benefits which will accrue from natural gas exploitation, as well as in allocating the responsibility for managing the unavoidable environmental risks. In terms of PSA, the Government retains ownership of the natural gas and hence the property rights governing the resources.

The Private Sector participation is in the form of Investor and Operator. The PSA provides for the Oil and Gas companies to participate in the investments risks of hydrocarbons exploration and subsequently to share with Government in the rewards which will accrue from commercial exploitation of the resource. However, the Oil and Gas companies may outsource or contract out all or any of the operations and related supportive services of the gas or oil fields. Through subcontracting of their operations and support services, ***ipso***

8 *"Sovereign Wealth Funds and Long-Term Investments" – edited by Patrick Bolton, Frederic Samama and Joseph E. Stiglitz Various models of sovereign wealth funds presented for review and initial consideration*

9 *Tom Tietenberg – describing the concept of "dynamic efficiency" in resource allocation; from chapter 2 under "Economics of the Environment: An Overview". Reference book "Environmental and Natural Resource Economics"*

facto, the Oil and Gas companies pass on the environment management responsibility and partial liability to their subcontractors who are not parties to the PSA. However, the subcontractors have no powerful direct incentive linked to property rights in direct pecuniary benefits to minimize environment pollution, save for fear to face penalties/sanctions in case of breaching the laws and regulations laid down to protect the bio-physical environment.

The unfurling situation is the fact that the gas sector will be a new and very important sector of the economy in terms of revenues and a major contributor to the GDP. Taking into account the experience of the mining sector in the Lake Zone, and some evidence of the existing inadequate capacity in institutional development in Tanzania to regulate the various aspects of environment management, there is a big risk that the private sector operators in the gas (and oil) industry could be left with insufficient oversight on the environmental front. The danger to watch is the Industry-Regulatory-Capture to compel leniency in legal enforcement, given the powerful position of economic influence which will be exercised by the Oil and Gas industry.

6.0 MANAGEMENT OF THE SALIENT SOCIAL ISSUES AND LOCAL SECURITY RISKS

6.1 Unchecked Greed and Resource Conflicts

Given the prospects of high revenue earnings from economic rents of oil and natural gas, unchecked greed of business, political or other social leaders can foment and precipitate "**resource conflicts**", which manifest as civil wars, regional conflicts involving neighbouring countries which share common borders, as well as in-country social divisions which weaken national solidarity. In the extreme they become a prelude to secessionist tendencies, with intent to draw new territorial boundaries curving out the regions with rich resource endowment and to declare them as independent sovereignty. That is the "**resource curse**" per excellence! Resource conflicts destabilize nations hosting unchecked greedy "***resource seeking investments***" and increase the risk to human safety, natural resource extraction infrastructures, as well as raise the overall cost of doing business.

Management of expectations at all levels is one of the key challenges in Tanzania. The discovery of huge natural gas resources has engendered heightened expectations for Tanzania with respect to revenue receipts and the likely spending power of the government. People think Tanzania can immediately get out of the poverty trap and move into the middle to high income bracket. Such popular view does not appreciate the level of investments required, the engineering challenges to be overcome and the time required to move through all the process steps before commercial gas production commences. The timeline is between 5 to 8 years activities.

While there may be few dream images of the erstwhile Middle East and Persian Gulf countries as models for sharing national prosperity of the new gas economy, there are also nightmare images of the bad experiences of the Niger delta being repeated in the Ruvuma delta. It is common knowledge that oil production in the Niger delta has resulted in environment degradation on a massive scale, which has totally damaged the traditional local economy and livelihood which was based on fishing and agriculture. In that regard, the local communities feel "left out" of the growth and economic benefits, which have accrued to Nigeria as an outcome of exploitation of the petroleum resources. Then local communities have come to be viewed as a security threat because they have engaged in hostile activities against both the Government and the Oil industry.

6.2 Fear of Marginalization and Civil Discontent

The civil discontent expressed in riotous demonstrations which took place in Mtwara region towards the end of 2012 and during the first half of 2013 were motivated by similar fears of being marginalized and left out of the new gas economy *a la Niger delta*. With a view to ensure the new gas economy is inclusive and properly domesticated, the Government must actively promote the participation of local communities in the gas industry. Particular roles are pertinent, for instance as providers of labour, as well as goods and services which can be supplied by local businesses from local farms, gardens, transport companies, restaurants,

hotels, construction companies, engineering companies, insurance companies and banks. Furthermore, corporate social responsibility programs of the Oil and Gas companies which aim to support entrepreneurship and local economies, as well as to improve social service delivery (*health, education and recreation sports facilities*) in disadvantaged communities, will go a good distance in building mutual confidence and trust as strong bridges of solidarity between communities and the Oil and Gas companies. The key to ensuring security of the gas industry infrastructure for upstream and downstream operations lies in winning the hearts of the indigenous communities in the localities hosting the investments.

7.0 URBAN DEVELOPMENT AND PROVISION OF THE ENABLING PHYSICAL INFRASTRUCTURE

7.1 Enabling Economic Services Infrastructure

As has been stated already, the gas industry upstream and downstream to exploit the world class hydrocarbon resources will be built ***de novo,*** and require the enabling economic services infrastructure for transportation, electric power, water and communication to be supplied preferably ahead of demand. The demand for office buildings to accommodate businesses will rise significantly in the gas economy, as well as other structures and fueled by rapid urban development and growth in Mtwara and Lindi Regions.

The development of gas industry related infrastructure, such as the expansion of Mtwara Port, with LNG Terminal, as well as the construction of housing and office accommodation for use by the experts and staff of Oil and Gas companies, must be completed and put into service early enough to facilitate further upstream and downstream industrial developments as well as support services. Fortunately, an area measuring more than 270 hectares in Mtwara has been designated for the establishment of a Special Economic Zone (SEZ) industries as part of the new economy linked to gas exploitation**.**

8.0 MACRO ECONOMIC AND WEALTH MANAGEMENT OF THE NEW GAS ECONOMY

8.1 Foundation of New Gas Economy

The prospective new Gas Economy of Tanzania will be built on the foundation of gross investments which exceed US $ 20 billion, including for example the 2-train LNG capacity with related and support services infrastructure. With gas price based on benchmark oil price of US $ 120 per barrel, LNG export revenues will average more than US $ 8 billion per annum over the project period of 30 years. The country balance of payments will improve significantly as a result and the Tanzania Shilling should appreciate in value. The Government will also be in a good position to undertake investments in public goods without aid dependence, or running high fiscal deficit budgets.

The new wealth of Tanzania will come with a number of risks which could lead the economy into the same pitfalls of the so called “Dutch Disease” (or Resource Curse cited above) with its undesirable consequences, and hence fail to use properly the time window of opportunity in new wealth to achieve the desired socioeconomic transformation with stability and sustainability. Currency overvaluation is one of the effects of the Dutch Disease and the primary consequence could be the decline of domestic industries such as agriculture and manufacturing. The long term impact to the economy will be particularly stark, if cheap food imports will replace local production, and sever the symbiotic interdependence between the rural farmers who produce food and the urban wage earners’ market. The resulting rural stagnation will increase income poverty as well as rural under employment, juxtaposed with the urban-based gas economy.

8.2 Youth Migration from the Rural Areas

The more economically secure lives of the relatively more affluent salaried urban dwellers who are beneficiaries of the direct, indirect or induced impact of the gas economy will act as a powerful magnet to pull rural youth to migrate from the rural areas. These unskilled rural-to-urban migrants will serve to swell the numbers of the urban unemployed and discontented, who will readily turn to social evils and crime in desperation of trying to earn enough money to buy food. Simultaneously, the rural areas will be losing their most able-bodied young people, who comprise prime stock of the socially necessary labour for agricultural production under the right conditions. In that manner, the vicious cycle of poverty will start turn to turn while gaining momentum that will lead to social failure of the nation.

8.3 Pitfalls of the Dutch Disease

In order to avoid the pitfalls of the Dutch Disease, Tanzania needs to take action and put in place measures which will ensure sound management of the gas revenues through transparency and accountability. Sound management of Government revenues includes priority expenditure in strategic investments such as education and skills training. Economic diversification away from over dependence on primary commodities production into other

sectors of manufacturing and services is another positive measure to forestall the Dutch Disease.

Notwithstanding the above, Tanzania has got an important natural asset that can serve to further diversify the revenue sources and thus mitigate or even thwart the Dutch Disease. It occupies a favourable geographic location as transit territory and international gateway for its land locked neighbours. Investments in efficient transport systems will lower the cost of business and turn Tanzania into a veritable international trade and logistics hub of the eastern and central Africa region. One of the ways to expand the role of the manufacturing sector mentioned above, is the establishment of the SEZ such as in Mtwara and in other places.

The other way is to establish logistics clusters for business and SEMs. Unlike most modern sectors of industry and commerce that demand sophisticated skills, logistics clusters create opportunities for the unskilled and semi-skilled labour in large numbers. Furthermore, logistics clusters are not readily susceptible to the violent swings of price volatility and business cycles. On the other hand, logistics clusters demand a lot of land to accommodate the requisite physical infrastructure and to operate efficiently. On this score, Tanzania has ample land to create logistics clusters which in turn will attract assembly manufacturing plants. The implementation of such a logistics cluster strategy will benefit the neighbours of Tanzania through lower transit transport costs which will lower their costs of imports and exports; while Tanzania will have created the base for a diversified and sustainable economy for the days when the hydrocarbon resources will run out.

8.4 The Heritage Fund Imperative

Prudent management of the new wealth includes the establishment of a "**Sovereign Wealth Fund**" or "**Heritage Fund**", which would ensure that future generations of Tanzania benefit from the gas revenues[10]. In that regard, there is need to set in motion as early as now, the process of writing the pertinent legislation which will put in place the institutional framework, rules, regulations, governance and operational structures for revenue management with the aim of avoiding wasteful expenditure. Since resource revenues can fluctuate dramatically, one of the key functions of a Sovereign Wealth Fund would be to smoothen expenditures to avoid volatility.

10

9.0 HUMAN CAPACITIES AND INSTITUTIONAL DEVELOPMENT

9.1 Envisaged Socio-economic Transformation

Sustainable socioeconomic transformation envisaged in the new gas economy must be **anthropocentric** i.e. the purpose of the development strategies to be employed should be centred on the human being.

Therefore, one of the most important factors of national preparedness to host the gas economy is to build human capacities in critical mass which will allow Tanzania to shape its destiny and development its path for socioeconomic transformation. Already, a number of young people have been sent out to acquire knowledge as well as to gain experience in the gas industry. However, the magnitude of the task to create a skill base in critical mass for the Oil and Gas sector is such that a comprehensive manpower training program would need to be designed and implemented as a nationwide coordinated program.

9.2 Institutional Development for the Gas Economy

Besides creation of the requisite human capacities, it is necessary to build institutions to function in a socioeconomic environment which is dramatically different from the conditions hitherto, which will prevail in the new gas economy of Tanzania. Key economic institutions in Tanzania like the Bank of Tanzania (*the primary institution of macroeconomic stability*), Capital Markets Authority and Social Security Regulatory Authority will have to operate in the new gas economy with radically different socioeconomic dynamics and challenges. For these institutions, there will be need to rethink their functional capacities and capabilities; organizational effectiveness or efficiency, governance and culture, with a view to re-invent the institutions saddled with responsibilities to regulate the strategic functions of the new economy; as well as key aspects of the Energy sector, and other closely related sectors.

10.0 CONCLUSIONS AND THE WAY FORWARD

Tanzania is about to emerge as an important gas producing country in international markets. However, all this is happening from a situation where the dominant sector in the economy was primarily agriculture, complemented by light industry, and more recently mining sector in terms of export value. Unfortunately, growth of the mining sector over the past decade has not translated into corresponding significant progress in human development. Therefore, the starting point for Tanzania going forward to accommodate the gas economy is revamp the supply of the basic skills from within the country.

The situation described in this paper otherwise outlines the fundamental state of unpreparedness to host the Gas Economy. It calls for the gas industry to be developed ***de novo***, with emphasis on developing requisite skills and knowledge to enable greater local inclusiveness. **To get ready for the new gas regime, it is crucial and vitally important to prepare and implement an action plan which will systematically create the enabling policy and regulatory environment, as well as supply the requisite physical infrastructure and human resources**.

Sound management of the macro environment to maintain economic and social stability is essential for confidence building, which is the necessary condition to attract investments in long term capital. Good governance, rule of law and property rights are the cornerstone to create the conditions which will bring about positive socioeconomic transformation that is sustainable and all inclusive.

ESRF is an independent, non-governmental research institute registered in Tanzania with offices in Dar es Salaam. Its operations began in April 1994 in response to the need for the development of an institutional capacity for policy analysis. The foundation conducts policy-related research, capacity building programmes and policy dialogues that enhance the understanding of policy options within the government, the business community, the donor community, civil society and the growing private sector. It also undertakes demand-driven commissioned studies that conform to its mission.

Vision:
The vision of ESRF is to become a national, regional and international centre of excellence in capacity development for policy analysis, development management and policy research by the year 2015

Mission:
ESRF's mission is to build capacities in economic and social policy analysis and development management.

Objectives:
The foundation's objectives are to build and strengthen human and institutional capabilities in economic and social policy analysis and sustainable development management. ESRF also aims to enhance the understanding of policy options within the government, public sector, business sector, development partners, and in the growing non-governmental sector, mainly in Tanzania and the other East African countries.

The Economic and Social Research Foundation (ESRF)
51Uporoto Street (Off Ali Hassan Mwinyi Road), Ursino Estate
P.O. Box 31226,
Dar es Salaam, Tanzania.
Tel: (+255) 22 2760260, 2760751/52,
Mobile: (+255) 754 280133,
Fax: (+255) 22 2760062,
Email: esrf@esrf.or.tz

ECONOMIC AND SOCIAL RESEARCH FOUNDATION
E S R F