Market Study to Strengthen Economic Cooperation in the Energy Sector

Final report

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List of Abbreviations

CBK	Central Bank of Kenya
DFID	Department for International Development
DPG	Development Partners Group
EAPP	East Africa Power Pool
ED	Energy Digest Magazine (KEREA)
EE	Energy Efficiency
EEP	Energy and Environmental Partnership
EKN	Embassy of the Kingdom of The Netherlands
ERB	Electricity Regulatory Board
ERC	Energy Regulatory Commission
FiT	Feed in Tariff
GDC	Geothermal Development Company
GDP	Gross Domestic Product
GHG	Green House Gases
GoK	Government of Kenya
GT	Gas Turbine
GWh	Giga Watt hours
HFO	Heavy Fuel Oil
HPP	Hydro power project
HSD	High Speed Diesel
IPP	Independent Power Producer
KAM	Kenya Association of Manufacturers
KEBS	Kenya Bureau of Standards
KenGen	Kenya Electricity Generating Company Limited
KenInvest	Kenya Investment Authority
KEREA	Kenya Renewable Energy Association
KETRACO	Kenya Electricity Transmission Company
KNEB	Kenya Nuclear Electricity Board
KNBS	Kenya National Bureau of Statistics
KPC	Kenya Pipeline Company
KPLC	Kenya Power & Lighting Company Limited
KPRL	Kenya Petroleum Refineries Limited
KRA	Kenya Revenue Authority
KTDA	Kenya Tea Development Authority
kV	Kilo Volts
KWh	Kilo Watt hour
LCPDP	Least Cost Power Development Plan
LNG	Liquefied Natural Gas
MDGs	Millennium Development Goals
MoEP	Ministry of Energy and Petroleum
MSD	Medium Speed Diesel
MW	Mega Watts
MWh	Megawatt Hours
NCCAP	National Climate Change Action Plan
NCCRS	National Climate Change Response Strategy
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organization
NOCK	National Oil Corporation of Kenya
PPA	Power Purchase Agreement
PPP	Public Private Partnership
PV	Photo Voltaic
O&M	Operation and Maintenance
OPEC	Oil Producing and Exporting Countries

R&D	Research & Development
RE	Renewable Energy
REA	Rural Electrification Authority
REF	Rural Electrification Fund
REFiT	Renewable Energy Feed-in-Tariff
SERC	Strathmore Energy Research Centre
SREP	Scaling-up Renewable Energy Program in Low–Income Countries
SAPP	Southern African Power Pool
VAT	Value Added Tax
WB	World Bank

1 Introduction

1.1 Background

The common East African Community market (150 million people including a growing middle class) is not only of interest to local entrepreneurs and consumers, but also to foreign investors. Kenya is usually seen as the entry point of this market, as Kenyan entrepreneurs have experience in taking advantage of these market opportunities. Kenya has the largest economy of the region and its economic growth has been steady in the past decade, which has resulted in a growing and vibrant middle class and has attracted many foreign investors (including from the Netherlands). Economic prospects for the medium term are equally good. The donor landscape in Kenya has changed fundamentally; many new actors and modalities have emerged.

The changing economic situation in Kenya has spurred the Government of the Netherlands to look beyond its development cooperation relationship and build a more economic diplomacy and business oriented relationship. While the development cooperation budget will steadily decline in the coming years, more financial and policy instruments are introduced that are directed towards the business climate. The Embassy of the Kingdom of the Netherlands in Nairobi (EKN) is exploring options to facilitate Dutch investment and trade in important economic sectors in Kenya, such as energy.

With a strongly expanding energy sector, there are many opportunities for Dutch business, which covers both conventional energy sources such as oil and gas, as well as renewable energy sources such as solar energy, biomass, wind and water. However, Kenya still shows important constraints which might undermine foreign direct investment. EKN's new role and supporting instruments could play a role in lifting such constraints for Dutch business.

1.2 Objectives and methodology

This study is intended to highlight opportunities and barriers for Dutch investment and trade in the Kenyan energy sector, and to provide the EKN with recommendations on what focus and instruments can be deployed.

The objectives of the study are:
1) To provide a comprehensive analysis of the energy sector in Kenya with special attention to opportunities for the Dutch business community in the short, medium and longer term (2015-2025).
2) To recommend to EKN its optimal interventions to catalyse Dutch private sector interest in investment and development of these sectors.

These two objectives are worked out in 3 main areas of interest:

- Current status of the energy sector in Kenya;
- Future outlook and appraisal of sectorial investment potentials;
- Recommendations for EKN interventions in economic diplomacy based on the sectorial study.

The desired approach to deliver on these three areas of interest is to focus on future Kenyan economic development perspectives, identification and understanding of the perspectives from the Kenyan and Dutch-based business sector and identification of sectorial opportunities.

Our methodology is based on desk studies in both Kenya and The Netherlands, complemented by field research by means of interviews and a questionnaire which has been distributed among Dutch business.

1.3 Structure of the report

The report is structured along the lines of the objectives. Chapter 2 entails a description and mapping of the Kenyan energy sector, including the energy carriers used in the energy mix, the main stakeholders, future outlook of the energy developments, government policies and programmes. In Chapter 3, the opportunities for Dutch companies are described, while Chapter 4 sets out the response of potential and active Dutch companies to the questionnaire. Chapter 5 examines the policy instruments and elaborates on the desired support modus in light of the opportunities and barriers for Dutch investors. The report is concluded with conclusions and recommendations, while several annexes give more details to the main text. Of specific interest is Annex I, which contains energy carrier fact sheets for easy reference and oversight for potential investors.

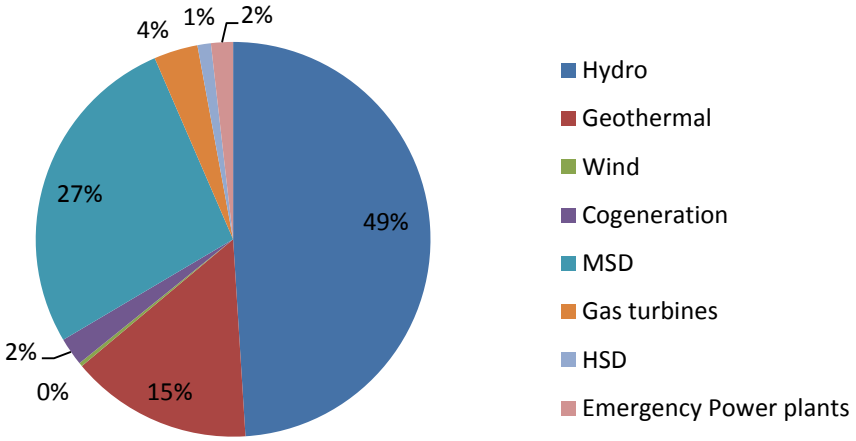
2 The energy market in Kenya

2.1 Current situation of the energy sector

Kenya's energy mix is predominantly defined by three energy sources: biomass, petroleum, and hydropower for electricity. Traditional biomass use represents about 70% of the energy consumption in Kenya, while petroleum and electricity account for 21% and 9% respectively.[1]

In the electricity sector, as depicted by figure 1 and table 1, the generation mix is dominated by hydropower which makes up 49% of the total installed capacity in 2013.[2] Fossil-fuel generation plants make up 33.5% of the total capacity while geothermal, wind and cogeneration make up the other portion of renewables in the mix.

Figure 1. Kenya's installed electricity generation mix in 2013



The actual annual generation contribution by each category is shown in table 1.

Table 1. Electric power sources and energy generated in 2013

Source	Installed Capacity		Annual Generation	
	MW	%	GWh	%
Hydropower	920	49	4,299	53.1
Geothermal	249	14.9	1,599	19.9
Wind	5	0.3	14	0.2
Cogeneration	39	2.3	71	0.9
Medium Speed diesel (MSD)	452	27	1,720	21.3
Gas turbines	60	3.6	27	0.3
High Speed Diesel (HSD)	19	1.1	53	0.7
Emergency power plants	30	1.9	261	3.2
Total	1,672		9,096	

Source: GoK (2014)

[1] Energy and Environment Partnership program (EEP)
[2] GoK 2014, Draft National Energy Policy

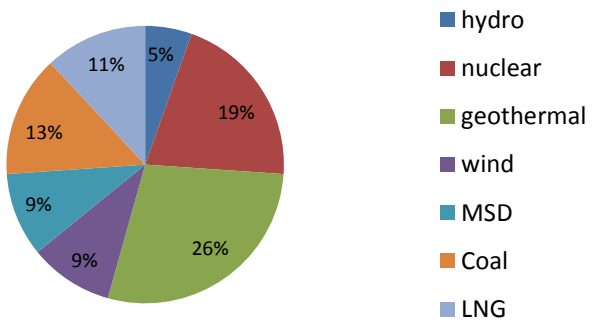
Due to high average generation costs of the current energy sources (25% of the total electricity generation is produced with diesel, 53% by hydro); Kenya has, compared to neighbouring countries, high electricity tariffs (USc 19.7/kWh versus USc 3/kwh in Ethiopia and USc 9/kwh in Tanzania).[3] As such, the lack of adequate and affordable energy has often been cited as a major constraint to growth. Power outages have been estimated to cost the Kenyan economy 7% in lost private sector sales revenue, 2% of total GDP and 1.5% of GDP growth.[4]

2.2 Market trends and developments

The energy mix is projected to significantly change in the medium term as the GoK seeks to shake off over-reliance on climate-vulnerable hydropower and the expensive and dirty diesel generators through diversification of energy sources. Geothermal, wind, gas turbines and coal are projected to feature prominently in Kenya's generation mix by 2019 as illustrated in figure 2.[5] The plan, which envisages an additional 5,000MW (by 2019), includes two significant wind projects. Lake Turkana Wind Power (300MW, €658 mln project) has reached financial closure in June 2014. The second big wind park (Kipeto Wind Energy Ltd, 100 MW), is expecting final financial closure in the last quarter of 2014. A smaller project of Aeolus Kenya, is expecting to have its first 3MW wind turbine at Kinangop to be connected to the grid in the last quarter of 2014 (and all 60MW by March 2015).

The 2011 updated Least Cost Power Development Plan for Kenya projects a capacity need in the range of 12,739-22,995 MW by 2031, with an intermediate projection of 3,751 MW by 2019.[6] Projected energy demand is expected to increase from 7,296 GWh in 2010 to 22,695 GWh in 2019 and 91,946 GWh in 2030. These projections are based on an array of planned infrastructural, mining and manufacturing projects including the standard gauge railway line, the establishment of a steel smelting plant in Meru, Konza Techno city and several other major energy intensive undertakings. However, it is doubtful whether implementation of these mega projects will be timely given the significant capital outlay required.

Figure 2. Projected generation mix in year 2030



Source: GoK (2011)

Wheeling of the additional electricity will require substantial investment in grid rehabilitation and expansion. The existing transmission system capacity is severely constrained especially during peak

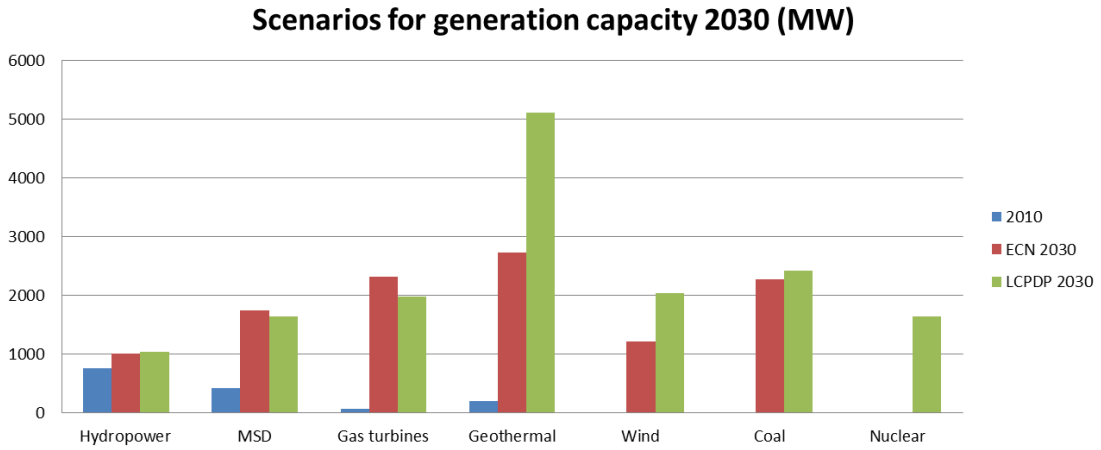
[3] AfDB 2014, Kenya Country Strategy Paper 2014-2018
[4] Ministry of Energy, 2011
[5] GoK 2013, Second Medium Term Plan 2013-2017
[6] GoK 2011, Updated Least Cost Power Development Plan Study Period: 2011-2031

hours.[7] The LCPDP recommends the development of approximately 10,345km of transmission lines over the 20 year period 2011-2031 to address these constraints, which are expected to be exacerbated by additional generation and growing demand. The grid expansion, whose construction costs are estimated at US$ 91,000/km of 132kV line, US$ 320,000/km of both 220kV and 400kV lines, is projected to require €3.3 billion over a 20-year period.

It is uncertain how the energy sector may grow to meet the large and increasing electricity demand in Kenya. Plans have been developed based on very high growth rates. The Updated Least Cost Power Development Plan (LCPDP) presumes a 14% annual growth rate in electricity supply between 2010 and 2030 (which is twice as high as the growth rate in the previous decade). It includes generation technologies that are not present yet or have very limited presence in the current energy mix, such as wind, nuclear and coal. ECN, ASB and IISD have developed an alternative energy scenario for Kenya based on existing policies and regulations and assuming no growth in international aid and related international investments. This resulted in a smaller but still substantial growth of energy generation between 2013 and 2030 of 11,287 MW, i.e. 11% annual growth rate.[8] In both cases, continued growth is expected.

Figure 3 shows the expected change in the energy generation mix between 2013-2030 (based on the LCPDP and ECN forecasts).[9] Geothermal power features prominently in the optimal development programme (proposed in LCPDP) and it is expected to surpass the current hydropower dominance in the generation mix by 2030. The plan leans strongly on the development of geothermal energy as the favoured generation source to meet projected demand and its capacity is expected to expand from the current 290 MW to 5,530 MW by year 2030 (equivalent to 26% of the system peak demand). The second renewable source mentioned in the plan is wind power, which is expected to form 9% of the total generation capacity with hydro lagging behind at 5%.

Figure 3. Electricity generation scenarios for 2030 per energy carrier



Source: GoK 2011, ECN, ABS and IISD 2012

The plan includes a significant proportion of coal and gas-powered electricity generation. The country has already moved ahead to negotiate an annual import of 1 million tons of LNG from Qatar on

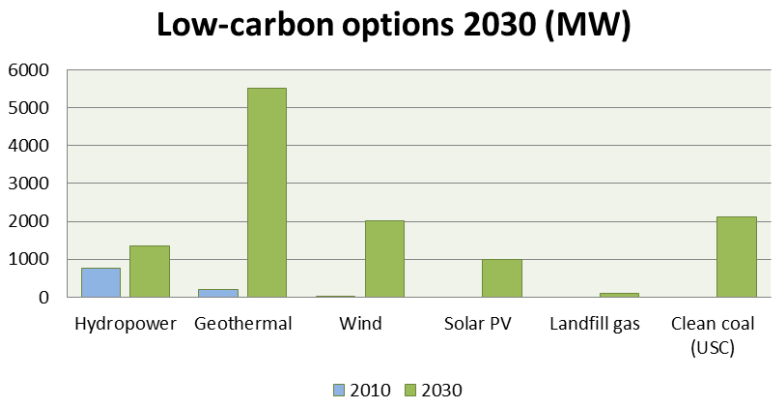
[7] GoK 2014, Draft National Energy Policy
[8] ECN, ASB, IISD 2012, Kenya's Climate Change Action Plan: Mitigation Chapter 5: Electricity Generation
[9] GoK 2011

concessionary terms.[10] The Ministry is currently carrying out a technical evaluation of submitted proposals for the proposed 700 MW gas-fired plant at Dongo Kundu in Mombasa and the 960 MW coal-fired power plant in Lamu. Commissioning of the gas plant is expected by summer 2016, the coal plant 6 months later. Both dates seem very ambitious.

Nuclear power is also included in the future plans; an idea that was mooted by the previous administration which led to the formation of the Kenya Nuclear Electricity Board (KNEB). According to the GoK's plans, nuclear energy will contribute 19% of total power in 2030, making it the second largest power source after geothermal. The first 1000 MWe nuclear unit is expected online around 2022, with additional units in 2026, 2029 and 2031, to yield a combined capacity of 4000 MWe. This seems a daunting task given the high investment costs. It is unlikely that nuclear power will be integrated in the energy mix in the middle or even long run (see Annex VIII: Nuclear Energy in Finland). The ECN scenario (see figure 4) has for this reason excluded nuclear as a viable option.

It can be concluded that the projections for 2030 require a big transformation from the currently predominant renewable energy mix. With the growing concern on climate change it remains to be seen if the transition to fossil fuels is going to be realised. ECN, ABS and IISD forecast less fossil fuel growth than the LCPDP. They have identified low-carbon options for electricity generation by 2030, which involves higher capacity for geothermal and wind power, as well as large scale market introduction of solar PV, landfill gas and clean coal (USC[11]).

Figure 4. Low-carbon options for 2030



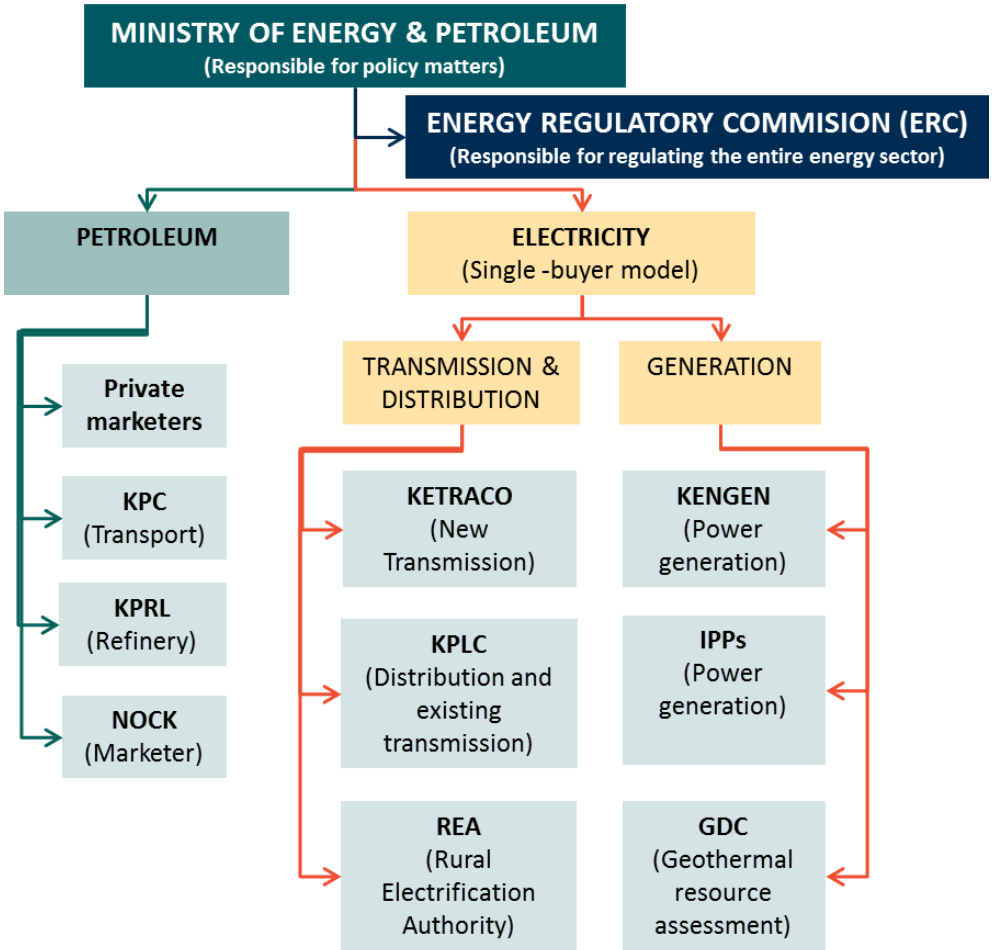
Source: ECN, ABS and IISD 2012

2.3 Key players in the energy sector

The Ministry of Energy and Petroleum is the lead institution for energy policy development and planning, mandated with overall leadership, oversight guidance and policy directions in the implementation of the national energy plan. The structure of the energy sector is as shown in figure 5 below. The Ministry of Energy and Petroleum is a traditional organisation, in which petroleum and electricity subsectors dominate the organisation of the ministry. Geothermal energy is represented, but other renewable energy sources are missing in this set up, reflecting that renewable energy plays currently a less important role in the national energy mix. In practice, fewer servicemen are working on the issues concerning the renewable energy sub sector, despite its numerous introduction problems.

[10] www.naturalgasasia.com
[11] USC = ultra-super critical

Figure 5. Kenya's Energy Sector - organisation chart



KPC *– Kenya Pipeline Company*

KPRL *– Kenya Petroleum Refinery Limited*

NOCK *- National Oil Company*

KETRACO *–Kenya Electricity Transmission Company*

KPLC *– Kenya Power &Lighting Company*

IPPs *– Independent Power Producers*

GDC *– Geothermal Development Company*

Source: Institution of Engineers of Kenya (IEK), 2012

Table 2 below shows key relevant institutions that are involved in the formulation and implementation of energy policy with their roles specified. As is the case in many countries, energy is a strategic subject, with core decisions being taken at the highest government level. Discussions regarding long-term strategic government plans are mostly taken by the central administration (such as on the future energy mix, investment in nuclear energy or the recently reported contract to import LNG from Qatar). Historically, private sector participation has been slowly evolving in the energy sector since the enacting of the Electric Power Act of 1997, which allowed for entry of independent power producers into the market[12], appeared to be slow.

[12] Prior to the 1990's, Kenya relied heavily on concessionary funding from bilateral and multilateral agencies for new investment in energy projects, a source was temporarily cut off as a result of the aid embargos placed on the country in the early and mid-1990's resulting into stagnation in development of new energy projects from 1991 to 1999 despite there being expansion plans for a number of plants since the beginning of the decade (Eberhard, E. and Gratwick, K., 2005). A new approach which allowed private sector participation in the sector was then adopted albeit with no clear structures then.

Table 2. Kenya energy sector

Affiliation	Institution	Role
National Government	Ministry of Energy and Petroleum (MoEP)	Formulates policy and drives sector planning
	The Energy Tribunal	Responsible for arbitration of disputes between ERC and aggrieved stakeholders in the energy sector
	Energy Regulatory Commission	Regulates all energy subsectors and protects interest of stakeholders ensuring reasonable return on investment for developers/utilities, licensing, approves PPAs between KPLC and power generators; reviews and adjusts tariffs for consumers and IPPs
	Rural Electrification Authority	Implement rural electrification through grid extension and off-grid systems such as solar and mini-hydro. REA administers and manages the Rural Electrification Fund (REF); mobilizes funds to support rural electrification, finances project preparation studies for rural electrification and recommends to government suitable policies.
	Kenya Electricity Generating Company (KenGen)	Develops and manages all public power generation facilities in the country (large and small hydro, geothermal, diesel-grid connected or off-grid)
	Kenya Power & Lighting Company (KPLC)	Public company that transmits, distributes and retails electricity to customers in Kenya
	Kenya Electricity Transmission Company (KETRACO)	Plans, designs, builds and maintains electricity transmission lines and associated substations
	Geothermal Development Corporation (GDC)	Government SPV charged with fast-tracking development of geothermal resources in the country
	Rural Electrification Authority (REA)	Its charged with accelerating access to electricity in rural Kenya
	Kenya Pipeline Company (KPC)	Responsible for operation of the oil pipeline system for the haulage and storage of petroleum products
	National Oil Corporation of Kenya (NOCK)	Is responsible for petroleum exploration and fuel marketing
	Kenya Petroleum Refineries Ltd (KPRL)	Is responsible for crude oil refining in the country
County Governments	42 county governments	Responsible for energy planning and development within their jurisdiction. In charge of electricity and gas reticulation and energy regulation

Source: Study Team (2014)

Since commissioning of the first 2 Independent Power Producer (IPP) projects, Westmont and Iberafrica in 1997, the policy and regulatory landscape has changed significantly and with it has come notable interest from the private sector. There are currently 6 active IPP projects in the country, as shown in table 3, contributing a total of 419 MW to the national grid or 25% of total national installed capacity.

Table 3. Operating IPP projects in Kenya

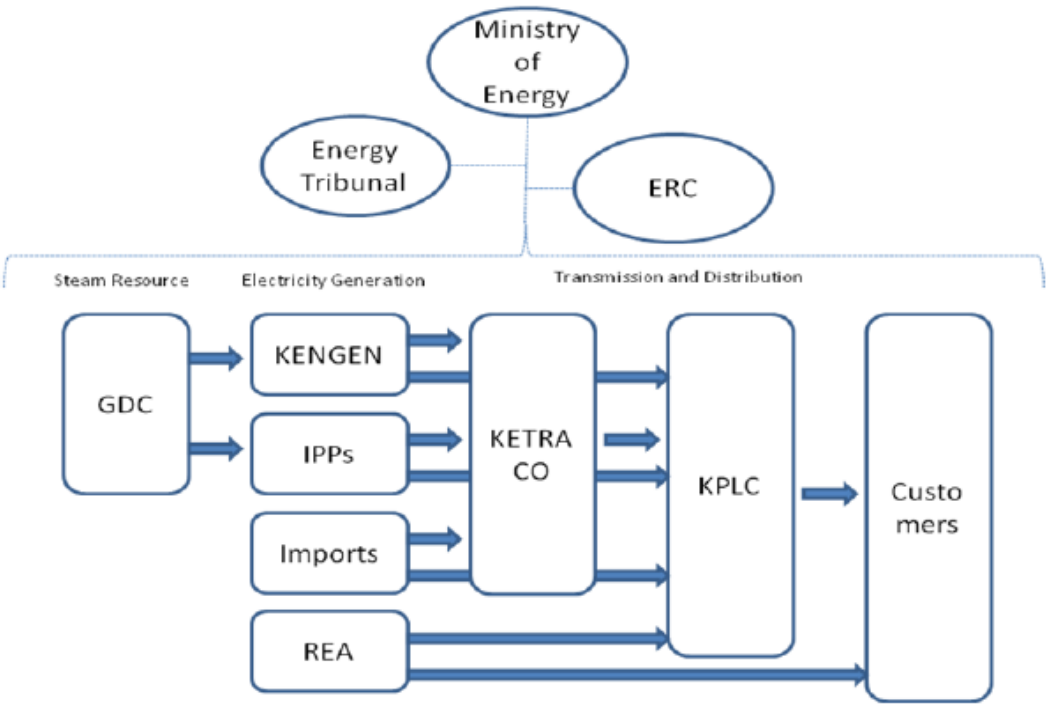
Independent Power Producers	Energy technology	Installed capacity, MW
Iberafrica	Diesel	109.9
Tsavo Power	Light Fuel Oil	74
Mumias Sugar	Cogeneration Bagasse	35
OrPower 4 Inc.	Geothermal	110
Rabai Power	Heavy fuel oil	90
Imenti Tea Factory	Small hydro	0.7

Source: Kenya Power and Lighting Company (KPLC, 2011)

In the meantime, other players have come on board and a number of PPAs have been signed. The KTDA Power Company for instance, is in the process of constructing the 5 MW Gura Small Hydropower Project at a cost of US$16 million, with commissioning expected late 2014.[13] Other notable players include the 300 MW Lake Turkana Wind Power Project; 60 MW Kinangop Wind Power project and the 100 MW Kipeto wind power project all of which have signed PPAs with KPLC and the first and the last having achieved financial closure, albeit after relatively long lead times (9 years for Lake Turkana Wind Power Project).

To this end and through its institutions, the department of Renewable Energy and the Energy Regulatory Commission, the Ministry of Energy and Petroleum prioritises the development of renewable energy (RE) with a keen focus on wind, solar, mini hydro and geothermal energy. The Energy Regulatory Commission's Renewable Energy Group places emphasis on mitigation of climate change through promotion of renewable energy. A major Government statement of intent in pursuit of diversifying energy sources, through injection of RE into the system, was through formation of the Geothermal Development Company (GDC) which is charged with exploration for geothermal resources and eventually provision of steam to IPPs. As shown in figure 6, GDC is the Government's primary driver of exploration and drilling activities for geothermal in the country.

Figure 6. Market structure and institutional framework of the electricity sub-sector



Source: SREP (2008)

2.4 Government policy and programmes

National energy planning in the country is guided by the policy set out in Sessional Paper No. 4 of 2004 (the energy policy document), which is executed through a number of statutes including the Energy Act of 2006, the Geothermal Resources Act of 1992 and the Petroleum (Exploration and Production) Act.[14]

[13] Kenya Tea Development Agency, 2014
[14] Draft National Energy Policy - 2013

The launch of Vision 2030, promulgation of a new constitution and recent discoveries of fossil fuels in the country, necessitated both review of the policy and statutes in order to align them to the economic blueprint, the new constitution and the emerging resource base in the country. The draft National Energy Policy of 2013 has been crafted to update and merges the old policy and statutes into one document. Other policy documents informing sector planning include the Least Cost Power Development Plan, the Rural Electrification Master Plan and the Kenya National Climate Change Response Strategy.

2.4.1 Key policy documents

The key documents directly related to the energy sector are:

- Kenya Vision 2030
- The Energy Policy of 2004
- The Energy Act No. 12 of 2006
- The Water Act (hydropower)
- National Climate Change Action Plan of 2013

Kenya Vision 2030

Kenya's Vision 2030 is the country's economic blueprint covering the period 2009-2030 within which it aims to transform Kenya into a middle income economy providing high quality of life to all its citizens. Analysis by the vision's preparation team revealed that Kenya's growth had, up to 2007, been largely driven by efficiency gains within which period the country registered growth levels of over 5% for the first time in over two decades. The vision thus prescribes a different route to achieving economic pillar objectives, which involves increasing savings and investment to more than 30 percent of GDP, improving the business environment and transport infrastructure, increasing access to energy, reducing energy and telecommunications costs which at present are higher than in neighbouring countries, and reducing the size of the informal sector in the economy. Energy is one of the nine key sectors identified as forming the foundation for the three pillars (economic, social and political) of the plan.

The Energy Act No. 12 of 2006

The Energy Act No. 12 of 2006 established an energy regulator, the ERC, which functions as the main policy maker and enforcer in the sector. The ERC issues all the different licenses in the energy sector, prescribes the licensing processes, setting and enforcing energy policies, collecting and disseminating energy data, public education and enforcing energy conservation.[15]

The electricity sector has been liberalized for generation and ERC can license private investors. Apart from KenGen and GDC, a number of IPPs are already operating in the country, with others under development. In line with increased private sector participation and in view of the diversification of energy sources feeding the national grid, MoEP is working on developing a new grid code funded by DFID that will streamline grid operations in the face of perceived instability that may result from the expected injection of 450 MW from wind projects in the coming 3 years.16 A study done by CPCS17 is discussing several types of electricity market models. A hybrid solution is proposed. The proposal focuses on regulating KenGen's prices; limiting their development to areas where they have expertise (hydro and some geothermal); and tendering the maximum new capacity to IPPs. This would

[15] www.erc.go.ke
[16] Kinangop Power
[17] Consultancy Services for the Study on Options for the Development of a Power Market in Kenya, CPCS, August 2013

substantially reduce KenGen's market dominance and would substantially ease the GoK's funding obligations to the electricity sector, but would still allow KenGen the opportunity to expand in the future albeit at a slower pace than currently planned.

CPCS also concludes that there is a need for New Electricity Reform Legislation to create a competitive wholesale and retail market:

- To introduce more competition in the Kenyan electricity market, electricity reform legislation will be needed;
- Whilst the existing legislative and regulatory framework may be appropriate for the single buyer model, it does not adequately provide for competitive generation and retail markets;
- A new legislation would provide more certainty and confidence to private investors and financiers.

To some extent, distribution is also liberalized by the Energy Act of 2006. The act defines a network service provider as "the person who engages in the activity of owning, controlling or operating a transmission or distribution system pursuant to a licence or permit granted under this Act". In effect, by virtue of this definition, the act provides for third-party access to the transmission grid. This provision has however not been clarified by the ERC so as to allow large consumers to contract their power supplies directly from generators.[18] Resolution of outstanding issues in the grid code and especially in wheeling operations needs to be in place before this can be put in practice. Another challenge to unbundling the distribution functions is the fact that all existing and planned generation capacity is currently tied up in "Take or Pay" PPAs with no free load existing in the market.

The Energy Act also established the Rural Electrification Authority (REA) and the Rural Electrification Fund (REF) and set the stage for accelerated rural electrification. The agency is mandated with facilitating access to electricity in rural areas, promoting development of RE and levying fees on all electricity sold for the rural electrification fund. Discussions held with stakeholders reveal reservations as to what extent these goals are being achieved by the agency as there appears to be some detachment with their role with no clear strategy of leveraging private sector involvement. A solar roll-out program to all un-electrified schools in the country appears to have dissipated on the backdrop of unsustainable models being utilized as regards O&M.

The liberalized electricity sector does not allow for private sector participation in power transmission, distribution and supply for systems bigger than 1 MW. Generation plants to be hooked to the national grid are also limited to plants with capacities bigger than 500 kW which locks out a number of smaller plants. The Strathmore Energy Research Center (SERC) is working with ERC to develop and to improve net metering, feed-in tariffs (FiT) and electricity banking policies, areas SERC considers key to creating an enabling environment to investment in RE in Kenya. If adopted and implemented, SERC hopes these policies will open up the electricity market to many players, including households.

The Water Act

The Water Act is another regulatory instrument affecting mostly the hydropower subsector. All hydroelectric installations require a water use concession. In fact, the Water Act governs surface and underground water, specifying the use of water resources for stand-alone and dam-connected hydro-

[18] Power Sector Reform and Regulation in Africa, 2012

electric generation and effectively encourages construction of small and medium scale hydro-electric facilities for electricity supply in remote areas.

National Climate Change Action Plan

The Kenya National Climate Change Action Plan launched in March 2013 sets out a clear low-carbon and resilient development pathway that emphasizes sustainability and addresses issues of climate change. The plan which was developed after exhaustive cross-sector consultations and takes into account the development plans set out in Vision 2030 and the Government's vision to achieve the MDGs and other internationally set development goals. The outcomes of Vision 2030 do however not seem to be fully in line with the Climate Change Action Plan, as it envisages more electricity generation from fossil fuels.

Oil and gas regulation under review

Recent discoveries of oil deposits have necessitated a revision of the legal and regulatory framework of the oil and gas sector in Kenya. The MoEP with assistance of the World Bank embarked on a programme to review the legal and regulatory framework for oil operations in the country with a view of enhancing a structural engagement of the private sector and ensuring benefits trickle down to the population. The technical assistance from the World Bank is supporting Kenya as it seeks to develop the right governance and accountability systems to manage its oil resources and avoid the curse that has befallen some oil and gas producers in Africa.[19]

2.4.2 Diversification of (renewable) energy

The government seeks to diversify its energy sources in the energy mix and to reduce its over-reliance on climate change-vulnerable hydropower which currently makes up 49% of electricity generation capacity. In this regard, development of geothermal energy is a clear priority to the government as besides featuring prominently on the LCPDP, it also provides the largest abatement potential of 14 $MtCO_2$-eq per year by year 2030 among the low carbon options in the electricity sector.[20] Wind, solar and mini-hydro are expected to power 70% of the population mainly through mini grids.

The government's mandate is to create an enabling environment for EE and RE through policy development. The FiT policy was established in 2009 covering wind, biomass and small hydro for capacities of up to 50 MW, 40 MW and 10 MW respectively. This was further revised in 2010 to accelerate investment in renewable energy and to include additional RE technologies including geothermal, biogas and solar. Potential investors in the RE sector, however, claim that there is still a need for further revision as the gazette tariffs (see table 4) do not reflect the cost of investment and O&M. One of our respondents pointed out that the FiTs are not indexed for inflation so that the profitability slowly disappears with the years to pass. Calculating a theoretical financial forecast is thus an impossible task, which does not increase the willingness to invest.

Table 4. Feed-in-Tariffs for various renewables with maximum capacity of 10 MW

Energy source	Capacity (MW)	Std. FiT (US$/kWh)	% escalable portion of tariff	Min. capacity (MW)	Max. Capacity (MW)
Wind	0.5 -- 10	0.11	12%	0.5	10
Hydro	0.5	0.105	9%	0.5	10
	10	0.0925			
Biomass	0.5 -- 10	0.1	15%	0.5	10

[19] World Bank, 2014
[20] GoK 2013

Biogas	0.2 -- 10	0.1	15%	0.2	10
Solar (Grid)	0.5 -- 10	0.12	9%	0.5	10
Solar (off-grid)	0.5 -- 10	0.2	9%	0.5	1

Energy source	Installed capacity (MW)	Std. FiT (US$/kWh)	% escalable portion of the tariff	Min. capacity (MW)	Max. Capacity (MW)	Maximum cumulative capacity (MW)
Wind	10.1 - 50	0.11	12%	10.1	50	500
Geothermal	35 -- 70	0.099	20% for first 12 years & 15% after	35	70	500
Hydro	10.1 - 20	0.0925	9%	10.1	20	200
Biomass	10.1 - 40	0.1	15%	10.1	40	200
Solar (grid)	10.1 - 40	0.12	12%	10.1	40	100

Source: Energy Regulatory Commission (ERC, 2012)

According to the regulator, ERC, new solar PV and solar water heating regulations, require all solar PV systems technicians, manufacturers, importers, vendors or contractors to be licensed by the ERC, while all premises with hot water requirements of a capacity exceeding 100 litres per day shall install and use solar heating systems with all entities undertaking solar hot water system installation to be licenced by ERC.

2.4.3 Policy outlook on diversification

Improvement in the FiT regime is still being sought. While the policy has been in place for the last 6 years, little achievement in regard to private sector involvement has been registered, raising the question of whether the instruments deployed are effective enough to attract private sector investment. The NCCAP recommends standardization of the power purchase agreements (PPAs) for RE, development of a national energy efficiency policy and greater coordination of technical assistance programs. However, this effort has not been helped by erratic government policies regarding taxation and licensing; recent removal of tax exemption for locally manufactured solar products coupled with the government's decision to suspend issuance of licenses for wind and solar projects until 2017, as it focuses on cheaper electricity sources, only result in sending mixed signals to potential investors.[21] Development of energy policy is often too slow to the point of potential RE investors heading to neighbouring countries in the region with more friendly policy.

Charting the way forward, broad policy actions in the energy sector have been proposed up to the year 2030, all geared towards attracting private sector investment in renewable energy. In the hydro sector for instance, GoK intends to set up a hydro risk mitigation fund under the proposed Consolidated Energy Fund to cater for risks such as prolonged droughts to cushion electricity generators, transmitters, distributors and consumers against adverse effects of hydrological patterns. The fund is also intended to reduce spikes in electricity prices from thermal power plants.

The government has an ambitious plan to support exploratory drilling for geothermal through GDC of an estimated 1,130 wells to provide steam for a planned 5,530 MW installed geothermal capacity to meet projected demand by year 2030. Public-Private partnerships are to be encouraged in carrying out further exploration and production through concessions.

[21] KAM, 2014

GoK also intends to review the existing legal, regulatory and institutional framework to enhance the sustainable generation, exploitation, production, distribution, supply and use of liquid bio-fuels. The government energy strategy includes support for R&D for the cultivation of high yielding feedstock so as to enhance sustainable deployment of biofuels. In the process, grant appropriate tax exemptions and duty waivers for bio-fuel production projects, plant and equipment will be provided in so far as such products are used to meet Kenya's energy demand. In order to promote use of solar energy, the government plans to incentivise the sub-sector through development of a framework for connection of solar generated electricity to the national grid, either through direct sales or net metering.

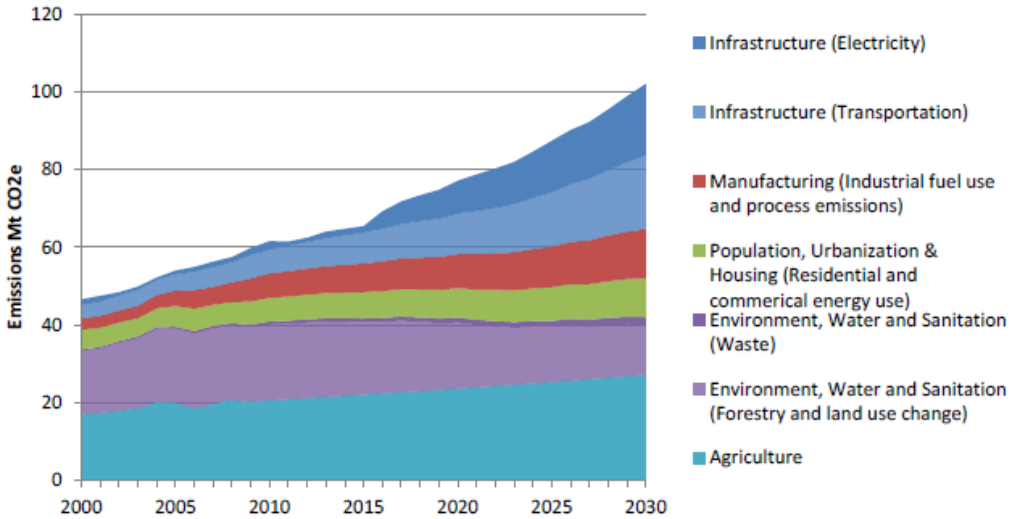
Many RE development plans exist with financing hinging on private sector interest. These are, however, hindered by GoK's lack of hindsight in matching sector regulations and FiTs to the needs of the private sector in the last several years in which they have been operational. Prospects of private sector investment to the extent necessary for all the plans are bleak and while international private sector involvement is needed to actualize the plans, GoK must seek to align itself with other competitive countries in the region to attract this investment.

2.4.4 Climate change policy

Kenya's National Climate Change Response Strategy (NCCRS) and its National Climate Change Action Plan (NCCAP) are the country's main guides in climate change response.[22] Both the NCCRS and NCCAP build on and are aligned with sectorial strategies, plans and policies.

Kenya is already grappling with the effects of climate change with drought and floods having devastating consequences occurring more frequently in recent years. According to the strategy paper, Kenya's contribution to the global GHG emissions though currently considered negligible is expected to grow significantly in the future as a result of projected population and economic growth coupled with urbanization. As at 2013, the largest emitters were agriculture, livestock and forestry accounting for 67% of the total national emissions. Emissions are however projected to increase from the current 59 $MtCO_2eq$ to 102 $MtCO_2eq$ by the year 2030 with the largest absolute growth in emission coming from the energy and transportation sectors.

Figure 7. Sectorial business-as-usual GHG emissions between year 2000 and 2030



Source: GoK (2013)

[22] GoK 2010; GoK 2013

3 Opportunities for Dutch companies

In this chapter, the opportunities for Dutch (and other) companies will be unravelled. The first section treats the general economic situation and outlook for Kenya, concluding that these are very positive. In the second section, we briefly relate to the transition of the relation between the Netherlands and Kenya from aid to trade. Section 3 examines the investment opportunities for energy generation in Kenya. Section 4 explores options for investment in other sectors related to the energy market, such as scientific cooperation and financial institutions. Section 5 looks at barriers to investment, and section 6 explains how international cooperation is aiming to take away these barriers.

3.1 Kenya's economic outlook

Kenya has experienced substantial economic growth over the last years. Apart from a slowdown in 2011, Kenya's economy showed real GDP growth of 5.2%, 4.3% and 4.6% in the first three quarters of 2013, primarily driven by financial intermediation, tourism, construction and agriculture.[23] Real GDP growth is estimated at 4.9% and 5.7% in 2013 and 2014 respectively and inflation is expected to remain single digit over the same period (5 to 7%). The economy's short- to medium term forecast is for sustained and rising growth. Growth is based on: increased investor and business confidence in the wake of peaceful March 2013 elections; increased rainfall; a stable macro-economic environment; lower, stable international oil prices; stability of the Kenya shilling; and reforms affecting security, governance and justice.

Table 5. Macroeconomic figures for Kenya, 2013

GDP Growth (Constant Prices, National Currency)	5.85 %
GDP (Current Prices, US Dollars)	US$ 46.481 Billion
GDP Per Capita (Current Prices, US Dollars)	US$ 1,072
Inflation (Average Consumer Price Change %)	5.1 %
Inflation (End of Year Change %)	7%
Population	43.324 Million
General government revenue (% of GDP)	25.9 %
General government total expenditure (% of GDP)	30.5 %
Total Government Net Lending/ Borrowing (% of GDP)	-4.573 %
General Government Balance (% of GDP)	-2.368 %
Total Government Net Debt (% of GDP)	42.9 %

Source: Economy Watch 2014

Such economic growth can only become sustainable if the energy provision to the economy is further secured and extended. As was shown in chapter 1, electricity generation capacity is expected to grow at least 11% per year up to 2030, in response to rising energy demand. Substantial foreign direct investment and other financial resources will be needed to meet these expectations, and in which Dutch investors and companies can play a role. Kenya has attracted several big Dutch multinationals among which Philips, Unilever, Shell, KLM, Boskalis and Heineken. With over 100 SME companies Kenya has vast economic ties with the Netherlands, which is the fourth export destination for economic goods. Potential Dutch investors are thus in good company.

[23] www.kenyaeconomic outlook.org

3.2 Dutch-Kenyan relations: From aid to trade

The Dutch government envisages to transform its relationship with Kenya from an development cooperation relationship towards a more economic diplomacy and business oriented relationship. The aid modality will gradually be replaced by investments in economic sectors of Kenya, first in the sectors known to EKN such as water, agriculture, food security and knowledge institutions, as these are spearheaded in the aid programmes. EKN is exploring options for the energy sector. The budget for the development cooperation programme will be diminished to €14.7 million in 2017 (2014: €25.4 million), while more financial and non-financial instruments will be directed towards the business climate.

For the implementation of this transition, it is clear that the role of the embassy requires a new orientation. EKN has formulated policy goals for the MASP period (2014-2017). It is foreseen that a stronger intergovernmental network has to be built in order to have influence on improving the Kenyan enabling business environment. Also more (economic) attachés will be deployed, replacing the development staff. EKN will promote political dialogue with Kenya, bilateral or through EU or in the broader Development Partners Group (DPG) to achieve these objectives. The improved business climate will also entail support to IFC focussing on regulatory issues, and Transparency international focussing on corruption. To further enhance the enabling business environment, policy dialogue with relevant government agencies and ministries will be intensified.

The fourth objective is on expanding Dutch trade and investments. Bottlenecks to doing business raised by Dutch companies will be dealt with through economic diplomacy, if they affect the level playing field. The MASP mentions: 'Next to the usual trade inquiries, several market scans have been performed to map opportunities in the Kenyan market for a specific product. Several consultations with Kenyan authorities have been necessary in order to ensure a level playing field for Dutch companies, mainly in the area of tax and customs. The Dutch Business Group that meets six times annually at the initiative of EKN has proven to be a useful platform to discuss relevant developments and possible actions by the private sector'.[24] The embassy will continue to look for synergies between its business promotion work and available financial instruments. This requires an integrated approach to the various instruments the Netherlands government has it its disposal, such as ORIO, DGGF, FMO, and CBI. These instruments will be discussed in detail in chapter 5.

In order to mitigate political-economic risks and strive for economic sustainability, the programme employs a private sector development approach with public private partnerships (PPPs), involving Dutch and Kenyan private partners – both for profit and not for profit. The EKN contribution involves a limited public investment with the aim of leveraging private investment or investment from international funds and financial institutions.

This political environment as described in the MASP 2014-2017 gives many incentives for potential investors. The EKN is prepared for its task and the trade orientation is given body through deployment of a clear philosophy, instruments to be used, and goals to be reached. The active advocacy attitude for the Dutch private sector and towards the Kenyan authorities is another sign of the changing paradigm.

[24] Pp6 MASP 2014-2017, EKN

3.3 Energy generation and distribution opportunities[25]

Interviews with public and private stakeholders confirmed that there is ample scope for investment for energy generation companies (10, 1, 7). Several respondents mentioned the possibilities in the wind electricity generation (1) and geothermal generation (4), both being main activities. Also grid extension projects are implemented (10, 1, 7). At a smaller scale some respondents think there are good opportunities for smaller stand-alone grids (2, 4).

Although not mentioned by the respondents, the prospects for participation in the gas and oil sector and the erection of additional generation capacity based on these energy carriers are positive. First of all the national energy planning is foreseeing this development and secondly the GoK does not have the needed finance available to develop this on its own. This is recognized by the GoK (9, 10) and private investors are welcomed. This is clearly an option for the medium and longer term as no activities are ongoing at the moment. Meanwhile the issue of the Feed in Tariffs should be settled in a way, which convinces (foreign) investors.

In contrast with the LCPDP projections, nuclear energy generation is not perceived as a viable option for Kenya (7, 4, 1, 9). However, if a private investor should come in, the technical expertise needed for the construction and equipment might be an opportunity for a Dutch construction company.

3.3.1 Solar panels and lighting

Even though solar PV does not receive a lot of attention in the LCPDP scenario, solar home systems with integrated appliances are a booming market (ED1, ED2, 4, 6, 9). The market of appliances has got a boost after the certification of solar lanterns, which forced inferior products from the market. A Dutch supplier (ARIE, S3C) is marketing solar lanterns with the slogan 'Dutch quality for local prices' (9).

The lack of certified installers of solar PV systems resulted in many faulty systems which are not any longer used. This had also to do with how the business model was set up, generally lacking O&M integrated services. Despite these drawbacks solar PV has become a hot topic as was reported in the Energy Digest.[26] Two universities give courses for solar PV technicians and about 300 new technicians enter the market annually. The assembly of Solar Panels is being done in Naivasha by Ubbink (EA) Ltd.

3.3.2 Solar heaters

New legislation for solar heaters is ready.[27] Solar water heaters are mandatory for SME's and households as soon as they consume over 100 litres of water per day. Per economic subcategory there are guides on what is required. New is the regulation for the building sector, which requires new buildings to install solar water heaters right away and have them audited every three years. Old buildings get time up to May 2017 to comply (3). The auditing capacity is highly insufficient for the need created (3, 6). The university (6) is planning dedicated courses.

A specific use of solar heating is in horticulture, an important sector in Kenya with quite some Dutch entrepreneurs active. To decrease the energy bill solar heaters are installed in the sector with profitable margins (4, ED1).

[25] This part is based on the interviews reported in the additional report. The numbers between brackets refer to the interviews for easy reference, to implement the anonymity clause.
[26] Energy Digest (ED) is the glossy magazine of the Kenya Renewable Energy Association (KEREA)
[27] The Energy (Solar Water Heating) Regulations, 2012 on the 4th April 2012 as per the Legal Notice No. 43 of the Kenya Gazette; announced by the ERC

3.3.3 Geothermal energy

Concentrated in the Rift valley there is an enormous potential for geothermal energy. The Government created the Geothermal Development Company (GDC) to take away the first risks with exploration and drilling, after which private investors are expected to come in. Unfortunately, GDC becomes a bottleneck as no wells have been transferred to the private sector (3, 9). In fact, private investors willing to take the exploration and drilling risks , provided that they get a license and a PPA, are not given entrance to the market, a situation which exists for several months now. One Dutch company is involved and their frustration is not contributing to the image of Kenya as a proactive country regarding the attraction of Direct Foreign Investment (9; company record in questionnaire study).

3.3.4 Oil and gas

The strategic position of Kenya astride East Africa's Coastline makes Mombasa the focal trade port for trade routes into Uganda, Rwanda, DRC and Ethiopia. Kenya is seeking to become the regional oil transit hub by upgrading and building new infrastructure. In this line, Kenya Pipeline Corporation (KPC) has already awarded Zakhem International a US$ 490 million contract to build a new fuel pipeline to replace the old one linking Mombasa to Nairobi which is to be extended to Kampala and Kigali. Meanwhile, GoK plans to construct the Lamu Port-South Sudan-Ethiopia Transport corridor (LAPSSET) which will feature among other things construction of a port with 32 berths in Lamu, 800km of refined oil pipelines from Lamu-Isiolo, Isiolo-Southern Sudan, and Isiolo-Ethiopia; and 1,300km Crude oil pipeline. A 120,000-bbl/d oil refinery at the new Lamu port is one of the other feature projects of LAPSSET as contained in Kenya's Vision 2030 blueprint.

3.3.5 Biogas

Biogas gains momentum in Kenya (ED1). Over 200,000 systems are installed today. Especially after 2009 many installers have entered the market, despite the fact that the market is constrained by access to financial means for the farmers (2). The tubular system is not yet a well-developed technology as it starts to leak gas soon after commissioning (2). The Dutch company SIMgas seems to be willing to open a factory in Kenya (2). Another company, KENAF/HIVOS/SNV, considers to set up local manufacturing in Kenya as well (3).

3.3.6 Improved cooking stoves

After decades of projects with improved cooking stoves (DGIS, GIZ) some of these start to become successful. A stove based on the seed-to-ashes philosophy is of ceramic materials and has a huge market in Nairobi. The philosophy implies the use of branches instead of entire trees which is an important environmental aspect (5, 6). There is a huge potential for this technology, even when taking into account that many projects failed to bring the stoves to massive market introduction. The new model accepts that cooking habits are not changing overnight. A stove of Philips, also containing electricity solutions (all-in-one) is affordable and has a strong demand. With 1,5 million stoves in the market already the profitability should not be a problem.

3.3.7 Wind energy

Also big wind park developers (two are active in Kenya) have difficulty with the PPA's. Main problem is to get a PPA in a reasonable time lapse, but more fundamental is that the PPA's are not indexed (1). The PPA of today maybe sufficient, but with time passing this agreement is loss-making. The FiTs are too limited (1, 2) as these projects are stretched to their limits to become profitable. As it is concerning 100 + 90 MW wind parks the Kenyan Government might be more forthcoming as it is an

important contribution to the goal of having 5000 MW installed in 40 months. Recently the Dutch director of the Lake Turkana Wind Power project announced the financial closure for that project, 9 years after its start. The second wind park, Kipeto Wind Energy Ltd may have a quicker run despite continuing problems with the PPA.

Small wind turbines are introduced by Dutch RIWIK. The market is not mature yet which resulted in the need to diversify to PV for hotels and wealthy Kenyan families. The latter was done successfully, but it shows that small scale wind, despite good wind regimes, still faces difficulties (3).

With the construction of wind parks, wind towers, turbines and electricity infrastructure are important. Wind towers are highly specialized steel constructions, which the Netherlands can deliver. The transport of 45 meter wind turbine blades requires specialized transport experience. The assembly on the spot requires the construction of a service road and high cranes able to lift the turbine and blades up to over 100 meters sometimes. All these services are missing in Kenya and could be provided by Dutch companies.

3.3.8 Electricity transmission and distribution

The electricity distribution is dominated by one state company called KPLC. The company is not functioning well in several respects. To get a PPA takes at least three years for most IPP's. Strathmore University has a large 600 kW solar system installed, but is still waiting for a PPA to come. This means that projects are even started before a PPA is obtained, thus contributing to uncertainty on the investment and without the possibility to calculate if the project is going to make profit and when.

Large electricity consumers were interested in direct purchase of electricity at the generators. A study has been conducted a couple of years ago but nothing has happened after that. KPLC is said to have 3 billion KSh received from customers who wish to be connected. The connection rate is low and customers are waiting for their connection for years (9). Net metering is also something which is deficient or maybe even non-existent (6). The financial and organizational state of KPLC is deplorable, though not as much as TANESCO in neighbouring Tanzania. The company needs refurbishment which can only be expected to happen after sufficient political willingness is generated.

Rural electrification is taken up via REA, which concentrates on schools, health centres and municipal government buildings in the provinces (9). Dutch companies sometimes mention this programme for which they want to have support from the EKN (Dutch company, respondent on survey).

Some interviewees mention grid extension as possible projects, be it real extensions for hundreds of kilometres or be it for the connection of wind parks to the main grid(10, 1). One respondent suggested Dutch activities in distribution and transmission lines (7).

3.4 Opportunities per economic sector related to energy

3.4.1 Financing Institutions

The biggest barrier to RE is access to finance, equity and lending for project developers; this was mentioned by virtually all respondents. This is mainly due to the conservative attitude at Kenyan banks which continue to earn their profits in known markets. The financing institutions are not familiar with the RE and Energy Efficiency sub sectors (7), which makes them very reluctant to enter these. In

general financing capital is too expensive in Kenya with 9+% at an annual basis for the cheapest capital to find. In addition the lending period is below 7 years even for companies like Coca Cola (7). Grace periods are usually not considered. These elements make investment capital beyond reach for most developers.

French seed money placed at the Cooperative Bank of Kenya (after a 1.5 years delay with the much bigger Stanbic bank) has become a successful model. As a rule the renewable energy sector is not accustomed to financing conditions while the financing sector is not able to calculate their risks with the relatively new RE technologies. The French AFD found the Kenya Association of Manufacturers for the due diligence while the bank applies its lending mechanisms. This fund realized 9 projects (value US $30 million, running times 11 years, grace periods of up to one year, interest rate 4.1 to 5.6%), effectively addressing the main financial barriers in Kenya. IFC was not successful during the last 2 years with a similar approach.

With the abundant resources in wind, solar, geothermal and hydro, Dutch banks might show the way in the development of inventive and innovative financing instruments, thereby learning from, for example, the KAM implementing the French financial instrument together with a Kenyan bank. With the current and anticipated growth in the market of virtually all RE technologies in Kenya, the interest of Triodos (in wind), Rabo foundation (with SNV) and FMO is a logical step, which needs to be followed by a closer look. The need for seed money for Kenyan financing institutions is mentioned twice (3, 7).

3.4.2 Energy studies and scientific cooperation

The national energy planning is worked out well with a view of the conditions to come to an effective energy use at the lowest level possible. The energy efficiency goals in both industries and households require energy audits. The energy auditors are going to be a bottle neck and without them there is no time path to give on when energy savings in industry are going to be realized. With two renowned universities involved and several others participating in their courses, the concept of training trainers is mentioned several times (3, 4, 2, 6).

With the market for RE technologies opening up several players try to enter, ripe and green alike. This sometimes results in lower quality products which do not get an O&M support structure (mentioned are the failures in mini hydro and PV as witnessed by Thiba SHP in the county of Kirinyaga (4), which in turn leads to decommissioning and failure, giving that particular technology a bad name (4). Certification of products in an as early possible stage is a must for Kenya. The Central Bureau of Standards (CBS) is responsible for this and a successful project has been the solar lantern, the certification of which resulted in abolishment of bad lanterns from the field (10). Energy labeling of appliances is not yet in place, but expected to come soon by the Energy Regulatory Commission (3).

Another such condition is the absence of testing laboratories for the products introduced into the market. Both universities (Jomo Kenyatta University of Agriculture and Technology, Strathmore University) try to get the status of certifier from the CBS, as the latter is also missing laboratories (10, 4, 6). Both universities are trying to get laboratories operational right now.
Not only products are foreseen to become certified, but also the companies delivering these appliances and services. This is helping the serious energy market players in a significant way (1, 5).

3.4.3 Energy policy support to the Government

The GoK is in need of quite some support to streamline policies and especially to implement them. There are many good initiatives ongoing, but there is little coherence and focus to be discovered. Diversification of the energy mix is a good thing to be found in Vision 2030. Increasing electricity generation capacity is another one. However, the expectations regarding time paths and the extent with which generation should grow and the pace in which this has to happen, point in the direction of unrealistic views, both at the politicians and policy makers.

The World Bank has issued a study on the structure of the power market in which it is concluded that many developing countries will have a mixed structure with elements of the old centralized and nationally owned utilities with new elements as privately owned companies taking part in the electricity provision of the country[28]. Unbundling of the power sector is sometimes not functioning. Especially in low income countries with a small electricity sector, of which Kenya is an example, this is maybe not a high priority. In either case, the electricity sector is in need for further adjustments as PPA's and IPP's are not easy to be realized, which is counterproductive for the sector and does not help to relieve the national budget from capital intensive investments in the sector.

On the one hand the GoK is expressing the willingness to go for a low carbon development path – with less carbon, oil and gas in the economy – while on the other hand the future energy mix is described with substantial levels of these fuels and with RE almost completely forgotten (LCPDP) (9, 2). Broad media attendance for the buying of 1 million metric tonnes of natural gas in the Persian Gulf oil countries also seems to point at unrealistic scenarios of economic development, as does the introduction of nuclear power in the energy mix.

The investments needed for the exploitation of the own oil and gas reserves are enormous and without foreign direct investment of the large oil companies it is impossible to develop these resources in the medium run. The GoK is indebted to the point of not easily getting international loans (a billion dollar bond of 2014 came with an interest rate of 9%). The IMF does not allow Kenya to borrow more and the Government is not any longer in the position to give Letters of Credit to big investment projects (instead they gave Letters of Comfort, which do not have any significance for the investors, and recently the GoK is backing from that practice)(9, 6, 1).

The NAMA made by ECN is an example of needed government support to get the UNFCCC stamp on the geothermal energy abundantly available in the Rift valley (9). The Conference of Parties (COP) to the UNFCCC, at its sixteenth session, decided to set up a registry to record nationally appropriate mitigation actions (NAMAs) seeking international support, to facilitate the matching of finance, technology and capacity-building support with these actions, and to recognize other NAMAs[29].
The Kenyan population, and this includes government and public service representatives, need to develop realistic views on what is possible and what not, given the over ambitious time frames of plans regarding geothermal and other energy carriers. Based upon realistic views the necessary political decisions can be taken on what to prioritize and where to put the scarce national budget first.

[28] Power Market Structure: Revising Policy Options, 2013, World Bank, ISBN:978-0-8213-9556-1
[29] http://unfccc.int/cooperation_support/nama/items/7476.php

First, the Kenyan energy market provides opportunities for foreign electricity companies and for companies having experience with energy efficiency in their own processes or for dedicated companies advising on EE (ESCOs).

3.4.4 Energy Service Companies

There is a lack of ESCOs in Kenya. There are hardly Operation and Maintenance activities accompanying the technologies offered. That is why a large proportion of technical failures results in decommissioning of the equipment in hydro, solar, biogas to mention a few (4, 6).

Dutch investments should consider the O&M aspect to be in-built in the business model in order to become successful. The upcoming licensing of appliances, equipment and companies (3, 4, 10, 6) is going to help to sift out the better companies.

3.4.5 Energy efficiency in several sectors

Energy efficiency is not often discussed during our interviews as most companies in our sample are engaged in RE. The Energy Regulatory Commission is responsible for the setting of targets in industry for example. In the future industries have to undergo energy audits every third year. According to the law the energy saving potential discovered has to be implemented for at least 50%, thus gradually improving the energy intensity in the economy (3).

3.4.6 Consultancy sector and governance

There are several opportunities for Dutch knowledge institutes and consultancy companies to support Kenyan energy policy and elevate barriers to the investment climate for the energy sector. The barriers where Dutch knowledge exchange could be of support are mentioned in this section.

Support to energy policy

Government energy policies are sometimes conflicting (2). This means that the playing field is uncertain about what rules are applied in the short and medium term. A tax exemption on foreign produced PV panels came suddenly in place and was hindering the Dutch company Ubbink (producing in Kenya) for almost a year, before the exemption was taken away after interventions of the KAM and others (7, 9, 2). In fact the changed budget system, giving more power to the politicians at the cost of the departments, was the cause of this measure. Before the department calculated and checked for consequences of new measures while the politicians did not do such a check. Reintroduction of the VAT is mentioned by one respondent (4).

Another type of problem is the government policy consistency. In the planning documents (LCPDP) one can read that oil and gas should play a major role in the energy mix, while forgetting entirely the contribution of RE, which are significant contributors to current energy mix (6). It is unsure what development Kenya is really opting for. This is the more incomprehensible because of the fact that the country is highly dependent on foreign investments for the development of the mentioned sources. Likely consequence is that potential RE investors are hesitant to invest as long as the policy line taken is not clear.

Inconsistency is also visible in the making of unrealistic plans such as the 5000+ MW plan; to think that one can triple the current electricity generation park is not really in pace with expectations and the current practice in which PPAs take three years at least. Geothermal and wind park developers are

frustrated with the lack of progress on the PPA's and the unreasonable feed-in tariffs. PPA negotiations take too long (3, 4, 6). In such a way the GoK makes itself untrustworthy, even when the projections of the expected electricity demand curve can be based upon correct assumptions and data. The railway system and big electricity users may account for 900+ MW (7), but development of infrastructure takes time, also in Kenya.

Dutch knowledge on energy policy can provide support to prevent such inconsistencies and uncertainties to the investment climate.

Clarify the role of counties in energy decisions

The role of the counties has become institutionalized in new legislation as a decentralization effort. With unclear mandates/practices of who is deciding on what, the already lengthy procedures become probably even longer, although it is somewhat premature to say so. What is important though is that this is the expectation of several respondents (7, 10). Dutch advice may help clarifying that role.

Combat corruption

Corruption is a major problem, which was already detected by the KAM in their recent survey (2013). All types of financial deals are needed at the ports, at the borders, getting licenses, land rights etc. This makes the transaction costs higher and the total project costs less predictable. Corruption also tends to make transport times longer which is sometimes a problem with some goods. EKN activities and of Transparency International may push in the right direction.

Labelling electricity appliances

A system of labelling electricity appliances is not yet in place (3). An energy efficiency framework is expected to come in existence early 2015 (3). Licenses are taking 30 days at the highest according the ERC (3), although in reality other time lapses seem to be the practice (4). Currently Kenya lacks testing laboratories yet these are introduced soon with the help of foreign institutions (3, 6), allowing for a smooth testing, licensing and labelling system.

Feed-in tariffs to match investor needs

Feed-in tariffs have gone some way in Kenya and nowadays they are adjusted every month. Important is that FiTs are seen as inadequate for the investors to make Kenya an attractive destination (6, 10, 1). The fixed non-negotiable tariff makes it easier, but now some projects get subsidies **on top** of the FiT to have these implemented, making the projects more economical than necessary (like the Ugandan GetFiT instrument, 6). It would be better to have an effective all-encompassing system in place. Dutch knowledge on such market-based instruments could support improvements in this field.

Auditing capacity for energy efficiency

There is a lack of certified auditors and the universities are trying to fill up these gaps with energy studies to come (3, 4, 6). In some cases international support is given by, for example, the Fraunhofer Institute which is related to Strathmore's SERC. There will be shortage of certified auditors for many years to come. The lack of auditing capacity is going to become a bottleneck when the energy efficiency legislation comes in place. Legislation exists, but the conditions necessary to ensure compliance are missing. It is better to launch new policy directives when the conditional framework is in place, in order not to lose face and trust in effective government policy making. Dutch auditing experience can make a difference here.

3.5 Barriers to investment in the energy sector

The investment in RE technology in the country has been increasing in the last few years, even though it is generally accepted that the pace would have been higher were the conditions favourable to potential investors. A key issue which features prominently across all subsectors of RE is inadequate feed-in-tariffs. The REFiT policy was implemented in 2009 after a four years' process, and is targeted at promoting the uptake of renewable energy sources in the economy. At the same time the energy market opened up to private investors. While this policy has increased investor confidence to some extent (6 IPPs are mentioned in table 3, with 3 in queue to obtain licenses), it is a general view that the rates are still not at a cost-reflecting level yet.[30] For instance, developers of two of the three large wind projects in the country contend that the wind energy tariff would be viable only on sites with constant high wind speeds and the solar tariffs are too low to attract financing.

The oil and gas sectors are still in their infancy. Exploration and exploitation are expected to emerge in the coming years. As the companies involved in these sectors are strong multinationals with a long standing national regulations experience, these companies are expected to shape the rules instead of the government. RE companies are many, diverse and without such a long standing experience and thus more dependent on the government's conditions. In Tanzania and Mozambique, Dutch oil and gas companies have encountered lack of local knowledge in the oil and gas sector as a major barrier to investment.[31] It is likely that this will also be a barrier in Kenya once oil activities commence.

Insecurity issues posed by Al Shabaab terror group from Somalia adds a new dimension to challenges expected in attracting required investment. The group has been launching repeated attacks in the region (more so in Kenya) which may dampen investor interest in the region and generally slow down economic development. Works on the planned Lamu port may also be compromised if adequate security is not assured. Security challenges are also posed by communities agitating for a fair representation in the development process of the oil fields. Tullow Oil and partner Africa Oil Corp. for instance had to briefly shut down drilling operations at two blocks (13T and 10BB) in October 2013 due to demonstrations by the local communities in clamour for more employment opportunities for the locals. Territorial boundaries' disputes between Kenya and Somalia also compromise licensing of new blocks off the Kenyan Coast thus derailing the pace of offshore oil prospecting.

The REFIT policy only allows for RE plants connected to the main grid, except for solar mini grids. The latter are included in the policy because of their suitability for remote arid/semi-arid areas. The cost of connection to the main grid, an expensive undertaking, is borne by the developer with a view to recovering the same in the negotiated tariff, thereby increasing the negotiation process even further. Grid inadequacies have been cited as key barriers to deployment of grid-tied RE sources in Kenya. A large portion of the national grid is old and dilapidated, requiring a major overhaul and rehabilitation to take up additional capacity. Therefore, lack of grid capacity to absorb additional production capacity, hampers investment as most of the RE's are site specific.
The process of negotiating PPAs with KPLC is very lengthy and often requires specially qualified lawyers of which there are only a few in Kenya. KPLC's capacity to drive these negotiations is also lacking and in some cases, developers have had to bear the cost of hiring qualified international lawyers to represent KPLC in the negotiation hence negating the principle of impartiality.

[30] Heinrich Boll Stiftung, 2014
[31] Netherlands-African Business Council's Round table on oil & gas, interview 2014

Financing of RE projects in the country is also viewed by many as a major hurdle.[32] Finding long term financing at favourable interest rates is difficult. Local financing institutions lack knowledge in the sector and as such view RE as a high risk sector as compared to their traditional customer base e.g. construction. Only two local banks have proven interest in the sector and even this is biased against smaller projects.[33]

Lack of expertise and technical capacity in the sector compounds difficulties in investing in RE in the country. There is lack of expertise in conducting bankable feasibility studies thus increasing risk for investors and make debt financing less likely. According to discussions held with the Institute of Energy and Environmental Technology (IEET), the sector lacks adequate technical support in as far as O&M is concerned and many community projects have derailed during operation due to a lack of skilled personnel.

A number of stakeholders interviewed in the course of this study view the complexities surrounding land tenure as a major obstacle. Accessibility to land for development of RE has been compounded by among other reasons the over-fragmentation of land parcels in some areas which makes it difficult to negotiate with the many land owners especially for way leaves for evacuation lines. Underhand dealings coupled with community dependence on land for their livelihood for which they do not have legal tenure results in conflicts with communities, a situation that has been known to kill projects.

KEREA points to a lack of standardization in the sector as a gap requiring immediate attention in order to limit flow of non-standard RE technologies in the market that not only inhibit market penetration of quality products but also erodes consumer confidence in RE. The association is working closely with the ERC to develop these standards for solar, even though the testing and certification would require a well-equipped laboratory which is lacking in the country.

Corruption is widespread in the country and it is certainly not contributing to the attractiveness of Kenya among investors. Nevertheless, the flow of FDI is considerable and growing, despite the fact that the survey of the KAM, our own survey under Dutch companies as well as numerous interviewees have pointed to corruption as a barrier. The corruption issue is possibly compensated by the availability of a growing financing sector and a functional stock exchange, which sets Kenya apart from neighbouring countries. Apart from that international monitoring and indirect interventions of international representations in Kenya, including of EKN (as discussed in the MASP) should result in improvements.

3.6 International cooperation addressing barriers

Energy policy is the government's mandate to develop and implement. However, many projects have been and are carried out through international cooperation in the energy sector in Kenya over the last decades (see Annex IX for a more detailed description). The barriers currently addressed by the international cooperation are manifold. Access to capital is the most important, and more specifically, affordable capital, with a long lending window, a grace period and low interest rate. At the same time lacking capacity both in the private sector and on the institutional level is mentioned frequently as a barrier.

[32] KEREA, interview
[33] KAM, interview

Capacity building is mentioned as a necessary condition for investment at all levels:

- In the government to come to a timely implementation of projects, understanding the role and functioning of tariff levels for different energy sources.
- In the banking sector which needs to be educated in the energy sector, including energy efficiency capitalization
- On building the technical, entrepreneurial and organisational capacities of those involved in the production, marketing, installation and wider take up of RE technologies

Decentralization is sometimes mentioned a centrepiece of policy change necessary for effective policy implementation with local levels giving more say in the development at a regional level.[34] Other voices are pointing at increasing levels of bureaucracy giving more space to corruptive practices (several interviewees expressed this fear), leading to longer project lead times and higher transaction costs for the investors. Also the resistance in some regions can be boosted if it comes to connection cables to the national grid passing privately and locally owned land, asking for excessive compensations (wind energy project).

Eradication of corruption is a major challenge, but a necessity to let the flow of FDI swell. Corruption tends to make the cost side of investment unpredictable and higher than without corruption, as well as it makes the lead times for project implementation longer. Especially SMEs cannot afford time loss and bear higher costs than strictly related to the investment to be made. Kenyan society as a whole, but the business community in the first place, has to see to it that Kenya is to level playing ground with other less corruptive countries

The high level of national debt is actually paralyzing the country to attract the necessary finance for the mega projects the government seems to head to: A multiplication of electricity generation capacity, development of the oil and gas sector, improvement of the ports of Mombassa and Lamu, electricity transmission lines to play a role as electricity exporter to neighbouring countries, the establishment of a nuclear generation plant, the extension and modernization of the railway network, to mention a few of the plans, each requiring more finance than the government is able and allowed to raise.

The above barriers are real and should also be taken into account for Dutch interventions in the sector. The analysis of donor activities also shows that there are several RE opportunities emerging, i.c. in the improved cooking stove field and in the solar systems and appliances, as well as in biomass projects (specifically biofuels). The opportunities may be valid for production companies involved in these technologies, consultancy companies with a record in RE policy capacity building, but also for banks. Even in a sub sector as the one of improved cooking stoves, with millions of people reached already, there is scope for many more millions still waiting for access to improved stoves. If the latter projects are located in sites where the standing biomass is a problem, these projects should also get the support of the national and local governments. In the latter case the lessons learned from organisations as HIVOS and SNV can be worthwhile to bank upon as they have worked extensively in the rural areas, where operation and maintenance are often difficult to realize. The oil and gas sector, although just in exploration stage mostly, is an investment candidate in the medium and longer run, as both technology and capital are lacking in Kenya.

[34] GIZ, MASP 2014-2017

4 Dutch energy related companies

For this chapter a twofold approach has been used, based on geographical coverage. First we aimed to collect information from companies already active in Kenya, to learn first-hand about market circumstances, possible obstacles and the opportunities the country offers. Secondly, we wanted to learn which Dutch companies are considering export or expansion to Kenya and the opportunities and obstacles they meet or expect to meet. We approached in total 152 companies; 129 companies through the industry associations and 24 companies directly, in the wind, solar, biomass, hydro and geothermal sectors, as well as construction companies (see Annex X for an overview and further details on the process). Seven of the companies (S3C, Riwik B.V., d.light, Ubbink, Greenspark B.V., SIMgas, Transmark) that returned the survey are already active in Kenya, either directly or via a subsidiary. The other two companies (Eurotron, Ballast Nedam Engineering) indicated their interest in investing in Kenya.

4.1 Overview per subsector

4.1.1 Solar

The participating companies are mainly small for-profit companies in the solar sector (six). Out of these, one company is active in the retail of PV production equipment, while the other four are active in the selling of PV systems and appliances sometimes. The latter four are small companies with turn-overs between €150,000 up to €2.5 million, with one company probably far beyond this 2,5 million level (an American based company active in 45 countries which did not give details on the figures). The number of employees in the solar sector companies varied from 5 to 90. Two companies are Kenyan based Dutch subsidiaries (Ubbink, S3C). The small companies have their earnings mostly from sales outside the Netherlands (over 95%). A fifth one has a strong footing in the Netherlands from where 75% of the turn-over is originating.

4.1.2 Biogas

There is one Dutch-based biogas company (62 employees) which is realizing 100% of its earnings outside the Netherlands. They are already established in the region (Tanzania, Rwanda), next to India. The company is willing to expand in Kenya and to establish production capacity in the country. It may also take over another company in their expansion plans (within 2 years). The company established in Tanzania with a very satisfying supportive role of the Dutch Embassy in Dar es Salaam. The reason to invest in Kenya is getting access to resources, capital investment and expected high profits.

4.1.3 Geothermal

There is one consultancy company under the respondents in geothermal energy drilling. It is trying to establish itself in Kenya, but the GDC is not responsive with giving a drilling licence, although the company is willing to take the exploration risk itself. It is a powerful company (93 employees, Dutch origin) which already invests in Turkey, Chile and The Netherlands. It is turning to Kenya because of the access to geothermal resources considered to be excellent. It is considered to be a strategic investment.

4.1.4 Building and construction

The last company responding to the questionnaire is a big Dutch construction company (3000 employees, active in 3 small countries outside the Netherlands, turnover being €1,300 million). It is

willing to spread activities geographically and Africa with its booming economies is the place where demand for construction is high. The company does not expect higher profits than elsewhere as competition is high.

4.2 Investment motives and barriers

4.2.1 Investment motives

The main reason for investment in Kenya is strategic investment (9/9), which can be translated as 'being there under the expectation of a growing market with good prospects'. Several (3/9) also mention the export possibilities, which are based on the same assumption.

4.2.2 External barriers for investors

External barriers mentioned by the responding companies are given in the table below (score; number of observations/out of total number). Respondents were asked to indicate the preferred aspects in order of importance to them (from 1 to 3).

Table 6. External barriers for investment

External barrier for investment	Score	No. of observations
1. National government policy	1.5	6/9
2. Political instability	2.3	3/9
3. Price pressure from competitors	1.5	2/9
4. Foreign competition	2	2/9
5. National budget deficit	2.5	2/9
6. Inflation	3	2/9
7. Credit market/interest rates	1	1/9
8. Cost of fuel	1	1/9
9. Imitation/counterfeiting	2	1/9
10. Finance regulations	2	1/9
11. Existence of a functional stock market	2	1/9
12. Corruption	3	1/9
13. Environment regulations	3	1/9
14. Corporate consumer demand	3	1/9
15. Finance availability at clients	1	1/9
16. Availability of qualified staff	2	1/9

As can be seen in table 6, the top line in the last column indicates that six companies observe that 'national government policy' as the biggest barrier for investment. With a score of 1.5 (This is close to 1) is indicated that this statement was mostly mentioned as the number one barrier. The interpretation is that there is little trust in the way the Government of Kenya defines the playing field for businesses: Probably too many surprises, sudden changes, unclear regulations, slow pace of setting clear rules, failing anticorruption measures, etc. can be the reason for this.

Next 'national' barrier, after skipping price pressure of competitors and global political instability (two elements which cannot be influenced by the GoK) is the national budget deficit, which is probably seen as spending limit for large government infrastructure projects, such as the Dutch construction company is interested in. Two out of 7 mention this point.
In the rest of the list other perceived national barriers are: Credit market/interest rates, cost of fuel, imitation/counterfeiting, finance regulations, existence of a functional stock market, corruption, and environment regulations and inflation.

4.2.3 *Internal barriers for investors*

The internal barriers for investing companies mentioned, are given in the table below (score; number of observations/out of total number). Respondents were asked to indicate the preferred aspects in order of importance to them (from 1 to 3).

Table 7. Internal barriers for investment

Internal barrier for investment	Score	No. of observations
1. Finding/attracting qualified personnel	2.1	7/9
2. Supply chain risks	2.2	4/9
3. Ability to forecast results	2.3	4/9
4. Balance sheet uncertainties	2.7	3/9
5. Protection of intellectual property rights	1.5	2/9
6. Counterpart risks	2	2/9
7. Maintaining margins	2	2/9
9. Working capital management	2	2/9

Seven out of nice companies indicate that qualified personnel are a major concern. This means that a continued effort to improve education is a must for the country. This need can only be expected to grow when more and more investors come to Kenya.

Supply chain risk is also a very strong perceived barrier. This has to do with transportation infrastructure and this result is in line with the economic analysis commissioned by the EKN (general economic analysis; for EKN, 2014) and the market research carried out by the Kenyan Association of Manufacturers, in which port infrastructure, handling of goods, bribes and on/off transportation from Mombassa and the formalities at the national borders, were identified as barriers. This is also a government related issue, which needs political willingness and continued political attention. In the same class is the protection of intellectual property rights. The ability to forecast results is also mentioned by 4 out of 9 respondents, and it reflects a high uncertainty that even with the resources and management structures in place enterprising in Kenya is going to be successful.

The remaining points relate to internal barriers and problems, which are present in the entrepreneurial domain under all circumstances.

4.2.4 *Earlier experience with Dutch export support mechanisms*

One company made use of ORET in the past (a construction company). Three companies had an application awarded under PSI. PSI had a tremendous positive effect according to one report with a decisive role for the Embassy to reach success. One other company expected more support from EKN with certain activities such as getting working permits from the Kenyan authorities. Another company knows about PSI, but finds its limits too narrow (meaning that it is focused at small companies, companies with little experience, few years of existence etc.). This indicates that there might be a more useful solution created for the smallest type of companies. One company indicates that it is in a cooperative group of solar Products Promotion. This group has not yet applied for support.

This rather overall positive experience with Dutch export mechanisms seems to indicate that the response is especially coming from the ones already familiar with support mechanisms. This possible

overrepresentation implies that for the ones unfamiliar with support a specific action may be needed to establish the EKN as a valuable player in the field of RE in Kenya.

4.2.5 Role expected from the Embassy

The roles expected from the EKN are diverse. Providing financial means in the different stages to prepare a business case (for prefeasibility study, feasibility study, preparation of a business plan, part of the financing of a business case) is the most preferred instrument the surveyed companies want to see: 7 out of 9 mention this as important. This is not surprising given the fact that the surveyed solar companies are very small, with even the biggest of them not having annual sales revenues exceeding €2.5 million. That is a rather small sum for a company, which wants to invest in another country. It would imply that a fair amount of the annual profit would be used for the foreign market entry. Maybe a meagre €250,000 is an absolute minimum to allocate when only sales operations are concerned. For production capacity to be established considerably more is needed.

The second EKN activity that companies have mentioned is that they would like to receive specific alerts on relevant opportunities. This requires a specialised person at the embassy engaged in closely following the business scene and the government policy developments (5 out of 7 companies).

With 3 out of 7 preferences are: 'providing specific information on request',' market research at the level of prefeasibility (maybe something similar to this study)', 'mediation of business contacts and contacts with banks'. A specific issue mentioned is 'support with legal issues' when it comes to getting work permits, drilling licences, contracting issues, intellectual property rights protection, etc. Legal issues were added 2 times by respondents.

One company showed disappointment with the (lack of) mediation from the side of the EKN. It was felt that the intervention of the EKN could have made the difference to them 'to pass the red tape'. Another company was very explicit in what help they could have received:

- Linkage to/promotion of our company/initiatives in higher level donor programs like WB/IFC, USAID/USAFD etc. Now we participate in EEP EA, but the Embassy could promote these applications at EEP Partners (Finland, Austria, UK);
- More linkage to Kenyan RE programs like REA roll out of solar on schools (part of national laptop program);
- Advocacy on Dutch interests and quality supply in bigger solar projects. In a number of counties (Siaya, Kisumu, Homabay, Kerichio) Embassy trade promotion on county level could help.

On the other hand, as compensation, one company showed high levels of satisfaction and even mentioned the name of the responsible embassy personnel which had been supportive. The last received questionnaire mentions 'information about the safety situation in the country' to be important to them.

This long list provides an idea about the gaps between what the EKN is currently delivering and what companies feel is necessary to further support their business. On the other hand, the need for more financial support is obvious for smaller companies with have to deal with very low cash flows and somewhere there is a strain between free entrepreneurship and taking the included risks and the level of support the Dutch government is able to deliver. To send an alert to the relevant business

organisations is, however, a good and practical opportunity if the companies show their interest and provide the communication channels to their sector, and not only to themselves. Round tables such as the Netherlands-African Business Council (NABC) round table on oil and gas can provide useful platforms to exchange information.

4.2.6 The results in light of the non-response

The response rate of the questionnaire is disappointing. Nine completed questionnaires out of 129 companies is not a solid basis for drawing firm conclusions. This makes us wonder; why do we have this low response rate? Some speculative reasons are:

- The companies are too small to follow the competition and the opportunities in the sector systematically;
- The questionnaire was released too closely preceding the holiday season;
- The business umbrella organizations in the Netherlands do not have a mandate to inform, but are exclusively concentrating on showing one face vis-a-vis the Dutch government and upcoming regulations and laws impacting on the sector;
- The companies are financially too small to be able to respond adequately to opportunities arising in far-off markets like Kenya;
- Companies not involved already in Dutch business support are simply hardly inclined to investigate what is in it for them.

A final concluding remark is that the instrument of a questionnaire is fit for this purpose. It is our experience that embassies are inclined to think that subsidies attract investments, while entrepreneurs do not reckon with government support as it hinders their freedom to enterprise. In other words: Embassies are not perceived by companies as their natural partners. This is a key barrier to pass for EKN.

The outcomes of the questionnaire given in this chapter are to be taken as indicative, but certainly not representative for each economic sub sector as the response rate is too low. The outcome provides a direction of thinking, without claiming that it is the only or the main direction to follow.

The good part of the questionnaire response is that quite some solar companies are participating. Therefore for this specific sub sector the answers are a more reliable indicator for what might be a real and main vision upon foreign investment needs. Also the fact that one big company in the construction sector reacted shows that also big industry is having an eye on Africa these days. A point in case is the increasing activities of Brazilian construction companies, established in the oil and gas sector in Cabo Delgado province in the north of Mozambique and the mining industry in Tete.[35] It got a real footing in both Mozambique and Angola with large projects in construction of roads and water schemes.

In general, it can be concluded that the solar energy industry is most interested in export or expansion to Kenya, as six out of nine portrayed companies are involved in solar energy. In addition, interest was shown by the following branches; geothermal (1), construction (1) and hydro (1). Interest was demonstrated by various industries; not only manufacturing companies such as Eurotron and Ubbink East Africa Ltd. responded to the survey, but also a consultancy firm (Greenspark B.V.). Furthermore,

[35] http://www.howwemadeitinafrica.com/brazilian-firms-growing-their-footprint-in-portuguese-speaking-africa/8426/

four (RIWIK B.V., Ballast Nedam Engineering, Greenspark B.V. and Ubbink East Africa Ltd.) from the nine respondents have received support from the Dutch government either through the PSI or through ORET. Finally, two (S3C and d.light) out of nine surveyed are social for profit enterprises.

A sector almost completely absent in the response is the advisory and consultancy services, despite consultancies have a vast interest to work in (eastern) Africa. This sector is not well-organized, so finding them is more reliant on personal connections. However, there might be a case to inform this developed sector in the Netherlands, possibly via channels yet to be developed.

The EKN might use the results and framework of the questionnaire in the years to come to further broaden the basis of knowledge (specifically to be mentioned is the urban waste sector, not mentioned by any of the respondents). In particular biodiesel from plastics is a sub sector which should be found as soon as possible as that raw material is abundantly available in Kenya. New companies approaching the EKN might be given the questionnaire and someone at EKN could be made responsible to store the results to be analysed in a later stage, for instance when the chosen way to provide services is going to be evaluated or changed.

5 Intervention instruments

As described in section 3.2, the EKN is embarking on a trade agenda in Kenya. New and innovative instruments are available to promote Dutch export to and investment in Kenya. With the large investment potential emerging in Kenya, the EKN is diversifying its attention to other sectors than the traditional agriculture and water sectors. Energy is a potential sector to be added to the services of EKN. This study is one out of three, which should result in recommendations on where to focus upon (ToR).

5.1 Relevant development instruments

There are several policy instruments that are relevant to strengthening economic cooperation in the Kenyan energy sector. First, the Government of the Netherlands can provide guarantees, loans, and equity through the newly set up Dutch Good Growth Fund (DGGF). Second, the Developmentally Relevant Infrastructure Investment Vehicle (DRIVE) aims to achieve development objectives through private sector and infrastructure development by providing concessional loans. Third, the Public-Private Partnership facility (PPP) could in some cases be relevant. Last, PSD Apps provides tailored, demand-driven tools for embassies to achieve their ambitions. Besides these instruments, DGIS funds several multilateral development cooperation programmes with a climate or energy objective that also implement projects in the Kenyan energy sector, sometimes in cooperation with the private sector, most notably the SREP. Hereafter follows a description of each of these instruments.

5.1.1 The Dutch Good Growth Fund

The Dutch Good Growth Fund (DGGF) is designed to help small and medium-sized enterprises (SMEs) that wish to invest in and export to low- and middle-income countries. The focus is specifically on expanding the possibilities for SMEs in the Netherlands in low- and middle-income countries which simultaneously contribute to local development. If there is a direct benefit for Dutch SMEs and the investment has major development relevance, larger companies may be eligible for funding as well.

The DGGF therefore provides a package of financing and insurance possibilities aimed at investment and trade transactions that contribute to development. The budget is as follows: €50 million in 2014, €100 million in 2015, €250 million in 2016 and €300 million in 2017. In addition, technical assistance is available to increase the development relevance of the transactions and the likelihood that they will be successful.

There are three pillars, of which the first is the most relevant to this study. The DGGF can offer guarantees to Dutch or local banks to encourage them to provide financing for a Dutch SME willing to invest with a sound investment plan. If a guarantee still does not provide the banks with enough certainty, the DGGF can seek alternative solutions, such as co-financing with a Dutch or local bank, or direct funding in the form of a loan or equity investment. The RVO implements this part of the fund. The RVO will assess the plans in terms of development relevance, corporate social responsibility and the likelihood that the investment will become profitable. To ensure that the plans are of a sufficiently high standard on all these issues, the RVO account manager may decide that the project qualifies for additional support. The Ministry provides technical assistance for this purpose. By providing this assistance, especially through master classes, management training and guidance on improving corporate social responsibility, a project can be made more robust and its impact can be increased.

The DGGF is an answer to some of the financing needs of the companies as they reported in the questionnaire and in the interviews. However, flexibility is of importance as no investment is the same and only flexibility of the conditions of the DGGF can cover the plethora of specific needs.

Other relevant programmes cease to exist

The Private Sector Investment Programme (PSI) and the development cooperation section of the Emerging Markets Fund (FOM-OS), both of which focus on promoting investment by the Netherlands (and other Western countries) in low- and middle-income countries, will cease to exist as separate programmes in 2014. The original Emerging Markets Fund (FOM) and the Finance for International Business programme (FIB) will also no longer be available for countries to which the DGGF is open. FOM and FIB will continue to be available for countries not on the DGGF country list, such as China and Brazil.

Whereas the PSI provided subsidies, the DGGF only provides loans. This means that the requirements for business cases are higher, and companies need more commercial viability.

5.1.2 Developmentally Relevant Infrastructure Investment Vehicle (DRIVE)

DRIVE is the successor of ORIO (Programma voor Ontwikkelingsrelevante Infrastructuur Ontwikkeling) and will start in 2015 (Kamerbrief 2014). Core elements are:

- Development relevance, in combination with other private sector and infrastructure development programmes;
- Flexible project cycle, aimed at complete project implementation, including early procurement;
- Concessional financing for the whole project, including soft loans.

Several of the financing needs (especially soft loans) as identified by IFC and KAM (and confirmed in the questionnaire and meetings) seem to be covered by this fund. The same flexibility remark as with the DGGF is relevant here as well.

5.1.3 Public-Private Partnership facility (PPP)

The PPP is aimed at improving private-sector development in emerging markets in the context of water and food security and water safety. The facilities support emerging markets through public-private partnership between government, private sector and knowledge institutes or NGOs. In some cases, the energy sector is closely connected to the water and agricultural sector. It could then provide opportunities for the Embassy to include energy-related projects under one of the facilities.

5.1.4 PSD Apps

PSD Apps provides tailored, demand-driven tools for embassies to achieve their ambitions. It includes a broad range of tools, such as starting up a curriculum for universities to enhance local knowledge, or organize a mission to facilitate knowledge exchange between Dutch and local experts. Also this need has been expressed in the questionnaire.

5.1.5 Multilateral development programmes on climate and energy

There are several multilateral programmes funded by DGIS which implement projects in the Kenyan energy sector. These will be shortly discussed here. The objectives of these programmes are primarily focussed on sustainable development.

Global Environment Facility (GEF)

As the financial mechanism of the UNFCCC, the GEF allocates and disburses funding to climate projects. An example of a project in Kenya is the Joint Geophysical Imaging for Geothermal Reservoir Assessment Project (JGI), aimed at removing barriers and reducing implementation costs for the adoption of renewable energy, aligned with country priorities for developing geothermal energy. It was implemented by the United Nations Environment Programme (UNEP), and executed by KenGen. The main objective of the JGI was to increase the efficiency of the geophysical exploration of geothermal reservoirs, and by doing so, reduce the number of costly and unproductive wells. As a result of the JGI project, KenGen was endowed with a new pool of seismic and magneto-telluric probes, which are in the vanguard of international geothermal imaging technology.

Climate Investment Fund: Scaling-up Renewable Energy Programme (SREP)

SREP was established to scale up the deployment of renewable energy solutions and expand renewables markets. It aims to pilot and demonstrate the economic, social, and environmental viability of low carbon development pathways. SREP financing supports technologies such as solar, wind, bio-energy, geothermal, and small hydro technologies. It stimulates economic growth by working with governments to build renewable energy markets, engage the private sector, and explore productive energy use. In Kenya it supports production drilling and capacity building activities of the Menengai geothermal project, and the installation of 3MW of wind and solar hybrid systems. The geothermal project especially seeks private sector engagement as Independent Power Producer (IPP) or a Public Private Partnership (PPP).

PIDG Private Infrastructure Development Group (PIDG)

PIDG mobilises private sector investment to assist developing countries in providing infrastructure vital to boosting their economic growth, and combating poverty. PIDG members consist of eight countries and the World Bank Group. It has seven facilities, all with a distinct remit to develop infrastructure projects with private sector participation. The most relevant facility to this study is the Emerging Africa Infrastructure Fund Ltd (EAIF), a public private partnership able to provide long-term debt or mezzanine finance on commercial terms to finance the construction and development of private sector infrastructure projects. It has provided US$15 million to refinance the construction of the Olkaria III geothermal plant. Another project involved senior and mezzanine finance of €22.57 million to Rabai Power, a heavy fuel oil fired plant. It is the eventual aim to convert to natural gas (LPG) once it becomes available in Kenya.

5.2 Relevant foreign trade instruments (BEB funds)

The traditional instruments of the Dutch foreign trade policy are governed by the BEB, now part of the Dutch Ministry of Foreign Affairs. Relevant instruments of the BEB are:

1. Subsidy regime for demonstration projects, feasibility studies and knowledge acquisition (DHK);
2. Partners for International Business (PIB).

These instruments can be relevant for the energy sector as feasibility and demonstration projects are often needed for a new technology to enter the market. New can be a new technology as such, the first time an existing technology is applied, or a new financing mechanism is tried out. The energy sector has seen projects in each of these classes.

5.2.1 Subsidy regime for demonstration projects, feasibility studies and knowledge acquisition (DHK)

The DHK regime offers three possibilities for funding to Dutch SMEs:

1. Demonstration of a product or service in one of the focus countries

A demonstration project can be useful for Dutch companies to introduce and position their technologies in order to commit clients and/or customers and increase export.

2. Study of the technical or commercial feasibility of a project

The outcome of a feasibility study, for example a project design or business plan, can help Dutch companies to engage foreign companies or investors to pledge financing for Dutch capital goods and services or projects.

3. Engaging external knowledge and expertise for advice and guidance

Dutch companies can acquire funding for obtaining assistance from external parties with regard to market search and entry, partnerships, strategy development, local rules and legislation and fiscal policies.

Due to the great interest in the DHK, the budget for 2014 has already been heavily oversubscribed and new applications are most likely not accepted. A clear sign, that DHK fills a gap for private clients.

5.2.2 Partners for International Business (PIB)

Partners for International Business focuses on groups of companies that jointly want to enter a foreign market. PIB works from a coordinated strategy rather than individual activities. By means of economic diplomacy, the government can remove trade and investment barriers. This allows entrepreneurs to seize opportunities. PIB is a demand-driven, flexible programme. The contribution of the government focuses on economic diplomacy. There are also additional activities in the field of promotion and matchmaking, government-to-government cooperation (G2G) and knowledge exchange programs (K2K). A group of at least three Dutch companies can apply. PIB focuses on companies in the Dutch Top Sectors, which includes energy. For 2014, the budget for PIB amounts to € 6,305,000.
This instrument can be very relevant for the renewable energy sub sector as these companies are often so little and limited in their possibilities that grouping them may make a difference for optimal use of scarce resources.

5.3 Desired support modus

Dutch industry is not waiting for an embassy to develop an active strategy for investing in the energy market in Kenya. First of all, there are already many companies and entrepreneurs active in Kenya. They found the way before the Embassy became active in the period preceding this research. Secondly, entrepreneurs are usually developing their own plans, independently.

Only with specific questions such as: ‘we want to pass the red tape’ in the Kenyan Energy Department for instance as one of the survey respondents put it, the Embassy can provide direct support. In the MASP 2014-2017, the ambition of the EKN to play a role with such interventions is clearly expressed.

For the segment of very small enterprises, the support of the Embassy is important. If the internal and external fears of entrepreneurs, as expressed in the survey, are taken as risks and the level of influence entrepreneurs and EKN can exert over these risks, we reach the following risk taxonomy:

1. Under partial but direct influence of EKN

Finance availability for clients, Credit market/interest rates, Protection of intellectual property rights, Counterpart risks, Imitation/counterfeiting.

2. Under partial but direct influence of company

Finding/attracting qualified personnel, Supply chain risks, Ability to forecast results, Balance sheet uncertainties, Protection of intellectual property rights, Counterpart risks, Maintaining margins, Working capital management.

3. Market related risk factors not under direct influence

Price pressure from competitors, Cost of fuel, Foreign competition, Corporate consumer demand, Availability of qualified staff.

4. Risk factors in the general policy environment

National government policy, Global political instability, National budget deficit, Finance regulations, Existence of a functional stock market, Corruption, Environment regulations, Inflation.

Given these perceived risk groups, the indicated support modalities by the entrepreneurs are (percentages between brackets show the importance for the topic over all respondents):

1. Providing financial means in the different stages to prepare a business case (for prefeasibility study, feasibility study, preparation of a business plan, part of the financing of a business case) (95%)
2. Receive specific alerts on relevant opportunities. (50%)
3. Providing specific information on request, market research at the level of prefeasibility (50%)
4. Mediation of business contacts and contacts with banks (33%)
5. Support with legal issues (work permits, drilling licences etc., contracting issues, intellectual property rights protection (25%)

It can be concluded that these support modalities are basically on the level of market intelligence. This is on the level of preparation of business cases, which is time consuming and costly and thus difficult to finance for the smaller segment of the Dutch SMEs. Respondents do not ask for to share risks with the companies when delivering the services and goods in the market.

If overlooking the results from interviews and the survey we come to the following conclusions regarding needs of Dutch companies active in the sectors of RE and EE:

1. *Access to capital* is the main and most frequent barrier to the sector. An instrument which is accessible for very small SMEs is a must to be successful to some degree (2). With very small companies (between 500,000 and 2,500,000 Euros annual revenues) active and/or interested in Kenya, this is not an easy task. Many companies are rather young and cannot show a long record, which is sometimes needed to be eligible for commercial finance.

2. *Policy advocacy* at the Kenyan government is an important role for the EKN as the GoK is widely perceived as less coherent and consistent in its policymaking/implementation. Next to the wide array of business risks, the risk related to a government changing rules overnight are a nightmare to

investors. The case of import levy exemption and the consequences for Ubbink produces a lot of damage to the company and the business climate. The Embassy should keep a close look on what is in the pipeline regarding energy policy plans and instruments.

3. *Development of quality standards, certification, labelling* (2, 6, 4, 7, 10, 3) is in the interest of both Kenyan and Dutch entrepreneurs. The involvement in laboratory supply would give a correct signal to both parties that the market should not be spoiled with inferior products, and in a wider sense that The Netherlands seeks a durable business relationship with Kenya.

4. *Energy efficiency* is important to Kenya but does not yet receive a lot of attention (2). Except for some universities, which are thinking of setting up courses for energy auditors, there is little mentioning of EE in the field. With the legislation coming into place early 2015, the EKN might carve out a role for Dutch companies, as energy intensity of the Dutch industry is among the lowest ranking in the world, which means that there is plenty of knowledge on energy saving measures and efficiency improvements. In an energy audit, the Dutch company Hoogovens (now Tata Steel) came up with over 50 measures to improve the energy efficiency of the South African steel producer ISCOR, resulting in one million tonnes of CO2-eq reduction annually. Most of the activities did not require big investments and had payback times of less than a year, with many not more than a couple of months.[36]

5. *Exemplary business models* are needed for Kenya. The EKN can play a role in finding these and seek implementation through relevant business partners. The cooking stove of Cookswell is an interesting case in point. The wind energy projects currently in critical stages will need some support in the sense of building service roads and connection to the national grid. The EKN needs to get credibility as a player in the energy field and this credibility can be earned by some smaller investments leveraging projects of hundreds of millions of Euros, as in principal has been done in the Lake Turkana Wind Power project.

6. The international community should try to develop a *regular discussion platform* with the Kenyan authorities (1) to assure that the energy policy is following a low carbon path. The registration of projects and programmes planned and implemented in the energy sector would help to avoid double work and allows for a good planning from the side of the EKN. The Development Partners Group (DPG) as mentioned in the MASP is potentially such a regular discussion platform.

7. Some see the role of EKN in a more active way of *promoting their interests in international projects* from other cooperations and multilateral organizations (survey).

If we relate the existing and coming policy instruments of the Netherlands to the main needs expressed by Dutch industry, the following oversight gives an idea of the match between both.

[36] Dutch AIJ programme (1996-2005) under the UNFCCC rules for Activities Implemented Jointly modality in the Ministry of Foreign Affairs (DGIS - DML)

Table 8. Potential matches industry needs and policy instruments

Needs of Dutch energy related industry	*Dutch policy instruments available*
Access to capital in Kenya	**DGGF**: focus on SMEs; large companies restricted Loans or equity provision **DRIVE**: focus infrastructure/private sector Concessional finance for entire project cycle Soft loans included **PPP**: focus is not on energy, but sometimes energy is integrated in main objective
Policy advocacy from the side of EKN	**DHK:** focus on demonstration projects, feasibility and knowledge acquisition (market research, partnership building, local rules and legislation and fiscal policies **PIB:** focus on groups of companies Economic diplomacy Promotion and matchmaking Knowledge exchange programme (K2K)
Development of Quality standards, labelling, certification	**DHK**: Local rules legislation and fiscal policies
Energy efficiency improvement in Kenyan industry, transport and agriculture	**DGGF**: Loans, equity **DRIVE**: concessional finance, soft loans included
Exemplary business models for Kenya	**DHK**: demonstration projects
Creation of regular energy discussion platform / Donor coordination	The Dutch Business Group that meets six times annually at the initiative of the embassy has proven to be a useful platform to discuss relevant developments. The Development Partners Group (DPG) Regular bilateral high level coordination meeting.
Active promotion of Dutch interests in international cooperations and the GoK	Maybe support to Dutch companies in Calls for Service and Goods delivery of the multilateral banks.

As can be derived from this table the match between what is needed and what is provided so far is rather complete. There are instruments available to meet the market requirements. It has to be taken into account, however, that SMEs have easier access than big companies. Projects have to have considerable CSR, social, and environmental impact to become eligible, which also excludes certain investments. All in all the main needs are covered.

The creation of a regular energy discussion platform is actually already realized with the DPG. It builds on both the direction the international cooperation has taken after the Paris Declaration and some good examples, such as in Mozambique. It is too early to call it effective donor coordination there, but it certainly helps International Cooperation to fulfil the long and complicated planning cycles.

The active promotion of Dutch interests may be adopted by EKN in a more visible way. The participation in the Lake Turkana wind project's financing is a good example of effective and visible participation. It gives a strong signal to the target group of Dutch industries. A point of attention is the EU competition regulations, but those have been taken into account in the design of instruments as DGGF and DRIVE. Specifically EKN's help with legal and institutional problems would be appreciated. In addition, the oil and gas contracts to be given by the GoK require close monitoring as well, to assure

that no chances are missed for the oil and gas sector, if that sector wants to cooperate with EKN by using this service.

If the available Dutch policy instruments are matched with the external and internal barriers for investment (see 4.2.2 and 4.2.3) reported by the respondents in the survey, we can see that some points are covered, but a big share of the barriers does not let itself be treated by actions of the EKN, such as global unrest, inflation, the timely availability of resources, transport problems, etc. Nevertheless, the actions of EKN chosen which are under its influence can make some difference for investing parties. Also here, High Level Consultations and the international cooperation in the DPG might result in a quicker process of taking away investment barriers or risks.

5.4 Expected outcomes of the use of the instruments

It is quite clear that EKN is not yet fully recognized as a player in the energy field. The Dutch companies did not react in the way that was expected and there is general scepticism regarding such a role. This means that EKN has to position itself in this market in a convincing way, convincing towards the GoK, the main players in Kenya, but certainly towards the Dutch industry in the Netherlands.

If we assume that the EKN is going to claim a role in Dutch industry support in Kenya through the convincing overall strategy as can be derived from the MASP, one can make some projections of the results of such a policy and in particular of the instruments currently available or soon available. The following table with results is speculative of course and can be greatly enhanced or diminished by any of the barriers already mentioned by the entrepreneurs (including more unrest from the side of Al Shabaab). The table is showing projected profits in million Euros for the years 2015 (when all the mentioned support instruments will be fully deployed), 2020 and 2030. The increase is taken with an annual 10% growth in most sectors. The data for 2015 are partially derived from the survey results, where possible. The number of companies supposed to become active is growing gradually based upon our estimated market developments in Kenya given its policy plans and sectorial strategies.

The number of industries/companies becoming active in Kenya is growing gradually as well. These numbers are capped for later years as some saturation of the market is assumed with several technologies. The number of companies for the year 2015 (21) seems to be reasonable, given the company interest encountered already, during this early investigative stage, without more targeted EKN actions in the proposed sectors to come.

It can also be seen that the profits given to the oil and gas sub sectors are exaggerated underestimations, if these sectors really come to development in the medium and long run. The nuclear facility is unlikely to be ever built during the period 2014-2030.

In the table are projections given for the development of the trade relations for the short and the middle term. These numbers can be – adapted eventually to the means the Embassy is willing to use – used as indicators for success: both in terms of numbers of industries as magnitude of the trade volume expressed in Euros. Apart from these indicators one can also deploy the indicator of the costs for the EKN of the total number of activities undertaken per year against the increase or volume of trade activities. Social indicators can be used for the increase in employment and development in the country and in particular for the rural areas.

Table 9. Projections per sector and per energy carrier

Sectors (energy carriers)	2015 companies #	2015 profit/yr million €	2020 companies #	2020 profit/yr million €	2030 companies #	2030 profit/yr million €
Energy						
oil & gas	2	1	5	25	6	42
solar PV	5	1	9	13	10	20
solar water heaters	1	0.5	3	5	3	6
wind park	1		2	10	2	15
small wind generators	1	0.1	3	1	4	3
Biogasification	2	2	4	6	4	9
waste gas extraction			1	10	2	25
improved cooking stoves	1	0.2	2	0.5	3	1
small hydro			1	1	2	3
Geothermal	1	0	2	10	3	19
rural electrification	2	0.2	3	0.9	4	1.5
energy efficiency						
industry			9	9	12	16
transport			2	3	2	6
agriculture			2	2	4	6
Sub-total		*5*		*96.4*		*172.5*
Financial sector						
soft loans and credits			3	5	4	10
micro finance			3	3	3	5
Insurance			3	3	3	30
Building & Construction						
Roads			2	2	2	3
nuclear facility					1	X
gas storage			1	5	1	10
gas infrastructure			2	5	2	20
oil piping/well construction			2	5	2	10
wind tower building			1	4	1	9
transport windtowers/blades			1	1	1	2
Energy consultancy sector						
All of above areas	5	0.5	15	6	20	10
energy auditing			5	10	5	12
energy planning	1	0.3	2	0.5	1	0.3
energy policy instruments	1	0.2	2	0.5	1	0.3
electricity tarification			1	0.5	1	0.6
Science & technology						
laboratory cooperation			1	0.1	3	0.3
curriculum development			2	0.1	2	0.2
joint institutions			2	1	2	3
Labelling			1	0.2	1	0.3
Total		**6**		**148.3**		**298.5**

The results of these actions in social and development sense are significant. With these turnovers as in the table, one can conclude that hundreds of thousands of energy systems are put into the market, basically the rural energy market and mostly RE hardware. But also the general economy will win with these technologies and the increased energy efficiency, saving lots of resources as well as capital. Indigenous banks will become more active when they see the potential of the new markets opened up by foreign competitors.

Special mentioning should be made of the increased labour market as many of the RE technologies are labour intensive and create both low vocational training and highly educated technicians. The increased possibilities for local economic activities, is further contributing to employment, often in poor employment surroundings.

The impact for a development path as assumed here, imply close economic relations between the Netherlands and Kenya, which would rank among the highest with the African continent.

6 Conclusions

Kenya is an exciting country when it comes to energy investment possibilities. The country is well endowed with wind and solar resources, and has many proven geothermal sources. The discovery of oil and gas and the presence of hard coal allow for a diversified energy mix in the long run. In order to expand its energy generation capacity and meet rising demand, Kenya is in need of Foreign Direct Investment.

The Netherlands can play a role of importance in the Kenyan energy sector. Virtually all energy carriers are well represented in the Dutch sector, perhaps with exception of hydro technology. The most promising energy carriers for Dutch companies in the short term are wind, solar and biomass. Geothermal energy is already well-developed, but the practice of licensing and concessions imposes barriers. Waste treatment and related energy production is still absent. Hydro energy is no longer a preferred option for the Kenyan government because of its vulnerability to droughts. The recently discovered oil and gas fields could provide new opportunities for Dutch investors in the medium to long term. The activities can be both up- and downstream. Energy efficiency has an enormous untapped potential and expertise in Kenya is lacking. In contrast, the Netherlands has one of the lowest energy intensities in almost all economic sectors. There should be ample scope for Dutch industries to bank on existing knowledge.

As implementation of energy policy and effective policy instruments are lagging behind, the Dutch consultancy sector can assist the GoK in creating a responsive and positive business climate. For implementation of energy projects, there are opportunities for building and construction (including infrastructure) companies. The Dutch banking sector, already active in Kenya, could expand its activities to facilitate the financial resources that are strongly needed.

The policy instruments of the EKN offer solutions to some of the main concerns of Dutch investors. A generous deployment of these instruments can deal with a number of important barriers, such as feasibility studies and due diligence, mediation for finding partners and finance, capital for investment (loans) and guarantees. It has to be taken into account, however, that projects require considerable CSR, social, and environmental impact to become eligible, which excludes certain investments. There remains a substantial share of barriers that do not let themselves be treated by actions of the EKN, such as global unrest, inflation, the timely availability of resources, transport problems, etc. Such barriers however have not prevented a considerable and growing flow of FDI to the country.

It is expected that EKN is going to be a successful stakeholder in Kenya if the strategy to become a main player is well articulated for the different sectors identified. This key role can be further established if interventions as with the Lake Turkana Wind Power Project are undertaken at the right moment, bringing good plans to execution through deployment of targeted instruments.

7 Recommendations

7.1 Conditions for EKNs success

The most important conditions for EKN to be become a key player in the energy sector are considered to be:

1) Participate in showcases

Show a driving commitment in showcases such as convening geothermal projects and the wind park development projects (Lake Turkana Wind Power). These big projects will attract attention in Kenya, the region, and The Netherlands. Relatively small efforts such like these will result in goodwill. These large projects should bring support to the smaller ones, as their cash flows do not allow for the market introduction in a proper way. Nevertheless, the small SMEs are almost compelled to take risks outside the Netherlands to diversify markets and products in order to spread risks. Support to exemplary business models may also include some form of participation in the French financed fund at the KAM. The interest in such a fund can be found out at FMO and RABO.

2) Build a dedicated business development team

Build a team in the EKN, which is meant to stay there for at least 4 to 5 years. The long lead times of projects in Kenya, up to several years, are a difficulty for every investor. With the same people responsible, it is much easier to cope with these long lead times. With ever changing representatives of organizations, it becomes much more difficult to keep the parties on line, which in practice means to keep the willingness and motivation alive. A dedicated team at the EKN can do much more process guidance and the developer feels more at ease with such a support. It should be borne in mind that the expectations of project developers usually do not span times longer than 1,5 to 2 years if the process guidance is good. Moreover, a successful project officer at EKN will get the trust of newcomers, which eases his or her task.

In addition, the team of the Embassy should be brought in competition with other teams in Dutch embassies and annual awards for the best teams might be competed for (as was done with the best PPP projects at Dutch embassies). A 'dedicated team' also implies that the members are not supposed to work as service men/women, but as private sector interest builders who are more and longer accessible than the usual Embassy opening hours allow.

3) Constant business environment monitoring

The general policy environment (for energy) needs to be monitored constantly. The EKN shows to be in the forefront with information on projects, plans, legislation, and labour law changes. The new role of the counties for example is to be followed closely, as the fear is that it will further complicate the obtaining of licenses and permits. In that same monitoring action, main stakeholders will meet each other regularly, which allow for support to the Dutch companies in search for good partners and financing institutions, one of their mentioned needs.

4) Build or take part in a business platform

With the EKN taking part in the role of building a platform, it may be expected that the GoK takes such a platform much more serious than individual stakeholders. It may eventually generate a vehicle which

may push agendas and forces towards shorter lead times and easier and more transparent procedures. Especially the smaller SMEs do not have the time and resources to follow the policy environment.

5) Develop a strategic plan

A strategic plan for the development of identified areas should be made beforehand. This should not only result in a list of priorities, but also in a better approach how to involve the more hesitant clients in The Netherlands. In this study general invitations did not work when sending out the questionnaire. A personalized and dedicated approach did rather well with a response percentage of ca 33%. This approach takes more time, but the payoff will be a complete list of approached companies, which will be approached regularly. Maybe a kind of informative letter will do, to keep them informed regularly. In Cameroon, a glossy informative bulletin was distributed in the planes of South African airlines, and reached investors exactly where one finds them: on the move in search for better opportunities. An alert system can be set up when the insight in the sub sectors is complete and the companies are known in terms of products and plans. The Finnish government had a glossy review of one pagers on all companies in Finland, interested in foreign business; an example of a useful marketing instrument as the Kenyan counterparts usually are not aware of the main players. The strategic plan should also receive realistic and useful indicators to measure the level of achievement. The indicators should cover both numbers of companies and turn overs, but also development indicators as DGIS has developed over the years. The annual reporting of the Ministry of Foreign Affairs should give account of the advancements.

7.2 Sectors and activities to focus upon

Opportunities for the Dutch industries, in terms of turnover to be gained, can be prioritized as:

- Natural gas and related infrastructure, oil, piping and well construction are the most lucrative sectors in the medium run (see table 8).
- The financial sector is also meeting an economy in great need for support with flexible instruments regarding interest rate, soft loans, grace periods and extended loan periods, next to specific needs with regards to micro finance and insurance. Initial interest shown by Triodos, FMO and Rabo may be explored as a priority in the short term.
- The solar industry is, with solar panels and solar heaters, a growing sector.
- At the same level: waste to energy projects (gas extraction from landfills) has a large potential
- Wind and geothermal energy are in the same class with high potentials and a significant role in the 5000 MW plan of the GoK.
- Energy efficiency has an enormous untapped potential and expertise in Kenya is lacking.
- Probably, building of roads has been underestimated in table 8. With the vast resources for road infrastructure development (and this for many years to come) and the need for transport access, this sector has shown to be high potential in other African countries.
- The energy consultancy sector also has huge potential in Kenya as RE and EE are both in the beginning stadium while the formative programmes of the universities are not delivering the required expertise nor in quality or in quantity.

Of these sectors, the first two mentioned need the least support as they have their own channels usually. The sectors dominated by smaller actors, RE and consultancy, are most in need for support as they do not have the means to develop a market on their own. Very capital intensive sectors like wind and geothermal have specific financing needs which sometimes require a role of EKN to tip the balance.

From the development contribution point of view RE options are most giving in terms of rural impact, gender and environment relevance and job creation.

Specific opportunities are formed by implementation problems of others which arise sometimes. As discussed in Chapter 2, a solar roll-out program to all un-electrified schools in the country has not been carried out because of a weak and unsustainable energy service delivery model. A Dutch industry with sufficient experience in the country might present a solution to the Ministry of Education for the stale mate.

Another opportunity: The treatment of plastic may result in the production of biofuels, definitely a sub sector where Dutch technology providers might play a role.

According to the survey outcomes the EKN can play a supportive role by focusing on:

1. Providing financial means in the different stages to prepare a business case (for prefeasibility study, feasibility study, preparation of a business plan, part of the financing of a business case) (95%)
2. Giving specific alerts on relevant opportunities (50%)
3. Providing specific information on request, market research at the level of prefeasibility (50%)
4. Mediation of business contacts and contacts with banks (33%)
5. Support with legal issues (work permits, drilling licences etc., contracting issues, intellectual property rights protection (25%)

The trade promoting instruments which EKN has at its disposal cover the private sector needs by and large. The only question is if these instruments allow the flexibility needed for the wide diversity of situations and conditions when it comes to project development.

7.3 Policy dialogue with Kenya

The most important support actions for EKN are: the national government policy, global political instability, national budget deficit, finance regulations, existence of a functional stock market, corruption, environment regulations and inflation. These are issues requiring constant monitoring and discussion with the GoK. The Development Partners Group (DPG) and the intended regular bilateral high level coordination meeting with the GoK are considered to be the most effective way to coordinate and influence. GoK expression of political willingness will sooner result in implementing policy initiatives, instead of a gradual fade out, as perceived by many observers regarding the willingness to pursue a low carbon footprint.

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Annexes

I	Fact sheets energy carriers (separate document)
II	Interviews with Kenyan stakeholders parties (separate confidential report)
III	Questionnaire
IV	Interview Protocol
V	Critical issues in investment processes
VI	Role of counties in energy sector
VII	Debriefing to EKN
VIII	Nuclear Energy in Finland
IX	International donors in the energy field in Kenya
X	Process description of the questionnaire

III Questionnaire: Survey on Behalf of the Netherlands Embassy, Nairobi

Triple E Consulting has been commissioned by the Netherlands Embassy in Nairobi to undertake a study on investment opportunities. The Netherlands Government represented by their Embassy in Nairobi has several financial instruments developed to help investments in developing countries, amongst which is Kenya. In order to fine-tune these instruments to the real needs of Kenyan and Dutch companies this survey form is developed, which takes you 7 minutes to fill out, but which gives a wealth of information to improve support to Dutch business in Kenya and to become supporters to Kenyan economic growth and welfare. You are kindly requested to send this form back per e-mail (even if you decide not to participate!) before July 7th 2014. If you have any clarifications you may wish to get with regard to this study please get in touch with the Embassy by sending inquiries to:

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or contact Triple E Consulting Phone +31 10 3414592

The filled out questionnaire should be returned to Triple E Consulting, email address:
Elske Veenstra: elske.veenstra@tripleeconsulting.com

Thank you in advance for your cooperation!

NB: Tick boxes in front of alternatives; fill out text where lines are given.

A. Your company

1. What economic sector describes your company best?

☐	Energy, being in:	☐	Tech [Software/Biotech]
☐	Mining/Construction	☐	Banking/Finance/Insurance
☐	Manufacturing	☐	Service/Consulting
☐	Transportation/Energy	☐	Healthcare/Pharmaceutical
☐	Retail/Wholesale	☐	Other:

2. Is your company a:

☐	stock market listed private company
☐	profit-oriented private company not listed
☐	public company
☐	Non-profit enterprise
☐	Other:

3. Does the company have a credit rating?

☐	Yes, being
☐	No, but would be approximately:

4. Your interest in Kenya is based upon plans to:

☐	Export to Kenya
☐	Invest in production capacity
☐	Other, being:

5. Other company information

Number of employees	
Annual sales revenues (in Million Euros)	million euros
What is the proportion of foreign sales in the revenues?	%
Country of company's origin	
Your job title/function in the company?	

B. Company investment/expansion plans

1. Is your company active in other countries? Which?

2. Why are you considering investment in Kenya?

☐	Strategic investment
☐	Improving profits
☐	Getting access to resources
☐	Export to Kenya
☐	Decreasing costs.If so: Which costs?
☐	Other:

3. Do you expect higher profits in Kenya than in your country of origin?

☐	Yes: Why?
☐	No: Why?

4. What are the top three **external** concerns of your company (rate 1 to 3 in decreasing order of importance)

Corporate Consumer demand
Corporate tax rates
Cost of fuel
Cost of non-fuel commodities
Credit markets/interest rates
Currency risk
Environmental regulation
National budget deficit
National government policies
Financial regulation
Foreign competition
Global financial instability
Global political instability
Inflation
National employment outlook
Potential for stock market correction
Price pressure from competitors
State or local government budget deficits
Existence of a functional stock market
Existence of externally rated banks which do protect according to internationally applied rules
Other:

5. What are the top three **internal, company-specific** concerns for your company?

Ability to forecast results
Ability to maintain margins
Attracting and retaining qualified employees
Balance sheet weakness
Cost of health care
Counterpart risk
Data security
Maintaining morale/productivity
Managing IT systems
Pension obligations
Protection of intellectual property
Supply chain risk
Working capital management
Other:

6. During 2014 and 2015, does your company plan to:

Acquire (part of) another company or companies? ☐ Yes ☐No
Acquiring NOT in the short run, but in the medium/longer run? ☐ Yes, in years (please put number) ☐ No

7. What effect, if any, has the Dutch export programmes/investment programmes had on your company's interest to invest in other countries during the last years?

☐ Very negative	☐ Somewhat negative	☐ No effect	☐ Somewhat positive	☐ Very positive	☐ Not familiar with such programmes

8. Can you expand on the question of how that effect of export/investment programmes emerged in your dealings with embassies and/or Ministry of Economic Affairs (Which programmes did you apply for and which critical factors can you mention?)?

9. What type of support would you like to see from the Dutch Embassy and the Dutch Ministry of Economic Affairs?

☐	Providing specific information on request
☐	Doing market research at the level of prefeasibility study
☐	Mediation contacts to host country entrepreneurs
☐	Mediation of banks interested in the economic sector of interest
☐	Provide financial means in the different stages to prepare a business case (for prefeasibility study, feasibility study, preparation of a business plan, part of the financing of a business case): specifically:
☐	Invitation for a business development mission
☐	Specific alerts from the side of the Embassy if they detect opportunities which might be interesting to you
☐	Other, namely

Is there anything you want to add which you feel is relevant for the topic of this survey?

For more information about this survey, please contact us via the address details given above.

Thank you for your kind cooperation! Please return before July 7th to:
elske.veenstra@tripleeconsulting.com

IV Interview Protocol

Interviews follow a formal procedure with the steps preparation, physical meeting and procedure and content.

A1 Preparation

Interview to be established 2 weeks in advance
Place and date established
Special entry requirements
Duration of entry procedure in premises
Travel time from one to next meeting
Taxi permanently available to team

A2 Meeting

(welcome by host organization)
words of gratitude by TL
Introduction of mission (C)
Discussion topics (D)
End of meeting
Procedure of the results: return to respondents
Promise to send final report for commenting
Words of gratitude of TL
Show out by host.

A3 Procedure and content

TM or TL works out the same day
The other checks on correct understanding and completeness of topics
Work out done same day
Check done the other day
Document with all discussions send back and forth during the week
Use of same format with date, organization, representing counterparts and their functions

B structure of the interview

In principle following the respondents flow of thought
Probing where necessary
Make it close to a normal conversation (i.e. include own thoughts, remarks etc.)
Check on completeness of topic coverage
Both TM participate in the discussion

C introduction

Good day, this mission carries out an assignment from the Dutch Embassy. The GoN has changed its policy for Kenya, characterized by From Aid to Trade. International Cooperation is going to be phased out the coming years, trade relations will be proactively reinforced. The Embassy is strong in the sectors agriculture and water. Under the new policy it wishes to expand in Energy and Infrastructure. This mission is interested in the energy field in Kenya. The proceeds should result in a good insight in policies, politics, main players, institutional arrangements, energy carriers, regulations regarding energy. Energy can be taken as broad as you wish. Our main focus is though on Renewable Energy and

Energy Efficiency improvement The main focus is on investor opportunities for Dutch companies, but also for Kenyan companies. In that respect opportunities, gaps, barriers, partnerships, needs of Kenyan energy businesses are of interest. Your contribution will be anonymized in the report. If you have any question please feel free to ask whatever moment.

D Topics of the discussion

What is your institution doing in the energy sector?
What are the prospects in your sector?
Are there gaps of knowledge to further expansion and development of our sector?
Typical barriers for development?
Opportunities for development?
What type of support from the Netherlands would be welcomed most?
What type of support might be relevant from the side of the EKN?
Any other consideration of interest, which we did not touch upon so far?

V Critical issues in investment processes

Investment decisions are a specific class of human behaviour. Many (economic) theories believe that these processes are rational in nature. This can be largely confirmed, but the rationality is not always in aspects such as logic, efficacy, efficiency, impact expectation etc. Instead the investor may have a certain perception of such elements. It is important to divide between the perception of reality and reality itself, as it may occur to other observers. An entrepreneur has an idea about that reality which makes him/her believe that he can make money with his idea. That is the principal motivation beyond such investment behaviour.

As investments take place in a political, economic reality the entrepreneurial vision is to a great extent defined by the features of that reality. In order to be successful an entrepreneur needs to have control over as many variables as possible in the investment environment. Clearly, political and policy decisions can be of decisive importance as shows the example of Ubbinks' solar production plant: With a suddenly introduced VAT the company became instantly non-competitive. The margins are not of the order that one can just reduce prices down the level of competition. This simply means a draw-back which can lead to destroying the economic activity, both felt by the entrepreneur and the workers in the factory.

There are several aspects to be learned from this analysis:

1. Politicians need to understand the consequences of their proposal before they take decisions
2. In the current situation with a strong role for the Commission of Energy, at the cost of Department of Energy representatives, a permanent assessment of upcoming changes is needed from the side of the entrepreneur (and the EKN)
3. The EKN with its policy to attract more Dutch investments has to keep an eye on what happens in this respect.
4. The EKN with its focus to keep the GoK on a low carbon development track should be particularly sensitive to changes in attitude and behaviour of top government representatives.

With respect to the energy field this means that RE should be prioritised as long as it does not compromise electricity delivery security, as long as it contributes to diversification of the generation mix (currently nicely developing, with serious threat in the medium and long run), and as long as it contributes to development goals as poverty alleviation (generating jobs) and sustainability (not threatening climate change, but instead being responsive and anticipatory). At the same time EKN has to have a permanent view on the Dutch investor interests, which may not always be in pace with the above marginal conditions; especially not when investment interest in fossil fuels is imminent, as is the case if the GoK is to head in the direction of fossil fuel based electricity generation (option on 1 billion USD gas delivery contract with Dubai), exaggerated generation capacity planning (5000 MW in 40 months) or ignoring the RE sub sector as a whole.

In fact, some of these mentioned plans are so long away from what is the reality of big energy sector investments, that the GoK steps long beyond trustworthiness at the population and international investors. Examples: 5000 MW installed capacity in 40 months is 3 times the current total capacity installed. A wind park generation project takes 94 to 120 months to develop. Gas infrastructure development (landing of gas, liquification, bulk storage, piping to the main service areas, building gas-generated plants takes at least 15 to 20 years to realize, not mentioning the complete lack of gas knowledge in the country. The trustworthiness, however, is a main issue for a foreign investor, as the

prevalent nightmare is that one has to renegotiate with every new government coming into power. Small differences in percentage can make the difference between profit or loss in big projects.

Another area of interest is in the lead times of investments. In the very favourable circumstances of the Netherlands an idea for a foreign investment (with some type of financial support of the GoN) up to realization may take some 2 to 2,5 years for the quickest processes. This means that the parties involved in such investments (project owner, project developer, investors, technology suppliers, banks, authority officials in both countries have to maintain a high level of attention, conviction and motivation at all players. In practice, these levels fluctuate for many reasons. And every player losing confidence in the process and its perception of the likely outcome is a threat to successful completion. Many good projects fail to get realized because of the fact that motivations at the participating parties go up and down in different pace, resulting in withdrawal of one or more of them. Project developers have to be very keen on information flows, feedback mechanisms, clear time frames and changing environments with relevance to the profitability to the investment. Not all succeed in keeping the group together.

The above requires a clear responsible representative from the side of the EKN, who stays on as such sufficiently long to see the inauguration of the project. Current HR policy at the Ministry of Foreign Affairs, with frequent changes in personnel at all positions of the embassies is not contributing to such a stable climate. Moreover, the archives of the embassies need to be complete and up to date at any time, if the EKN wishes to play its role on foot of equality with the other entities.

In addition to the above: The change in paradigm implied in 'From Aid to Trade' is clearly a government driven move. It does not necessarily mean that the needs of the private sector are in parallel with this change. Investment ideas use to have their own logic, historical place and personal motivations and the EKN policy can be supportive to that. In everyday reality of trade relations it must be acknowledged that big companies find their own way, looking upon the embassies more as a barrier than a natural partner, while smaller players need the embassy and export mechanisms in order to overcome their financial limitations with regard to exploring foreign markets. Nevertheless, the EKN can play an important role, but long term and robust organisation of the support, including personnel at the embassy is an important condition to success.

Finally, the role in market analysis, contact facilitation in both ways, application of specific financial instruments and, not least, direct discussions with government are of valuable importance. The latter refers to the more business as usual approach.

VI Role of counties in energy sector

Background

Kenya recently adopted a new constitution thereby replacing the fifty year old constitution of Kenya, 1963 (CK1963) which was enacted by the British House of Commons and issued as the Kenya Independence Order – in – Council of 1963. The Constitution of Kenya, 2010, was adopted in a national referendum on August 05, 2010 (CK2010), thereafter, promulgated on August 27, 2010 and thus became the supreme basic law of the land. With it came near total transformation of the principles, processes and structures of government.

Devolution, one of the resulting structures principally takes away and re-distributes out the power to plan, legislate, budget and make policies for governing from a previously highly centralized national executive and legislature to forty seven county executives and assemblies (see figure 8 below). Each county Government comprises the county executive, county executive committee, county assembly and decentralized units.

Figure 8. Kenya political map showing 47 counties as contained in CK2010[37]

[37] Geocurrents.com

The County Governments have and exercise executive and legislative authority including the accompanying mandates and powers, to raise limited revenue, establish policies, plan, and budget and carry out the processes of governing.

Role in the energy sector

Counties have clear mandates as provided for in the CK2010 constitution, As regards energy, the mandate can be broadly classified into three as below narrated.

1. Policy and regulation

The constitution of Kenya as contained in the fourth schedule clearly outlines the different functions to be undertaken by both the national and county governments with respect to energy. Electricity is however considered to be both a national and county resource. The National Government is in charge of developing the national energy policy including electricity and gas reticulation and energy regulation. This mandate is implemented through the various government bodies including the Ministry of Energy and Petroleum and the Energy Regulatory Commission.

The county government is in charge of county planning and development including electricity and gas reticulation including energy regulation. However, this specifically applies to the development and use of energy within the counties, in which case the county government may develop policies and regulations to guide the process. In this regard, counties can undertake power generation projects to meet their own needs. Where conflicts between national and county policies arise, the national policy/regulations shall suffice.

The county government participates in issuance of environmental licences through county representatives sitting in the county environmental committee. The county government develops its own environmental thresholds which guide the process of licence issuance.

2. Trade development and regulation

The county government is charged with issuance of development clearances and licences. In this regard, all licences including approval of technical construction plans & drawings are issued by the county governments. Issuance of trade licencing to run and operate businesses within the county will also be a mandate of the counties.

3. Provide an enabling environment

Though not directly related to energy, counties are charged with regulation and control of several other sectors which influence success of any project within its jurisdiction including energy. For instance, counties are charged with development, maintenance and repair of all class C roads found within their boundaries. It will therefore be the mandate of the county to ensure that access roads to proposed energy projects are built and maintained regularly to attract and hasten development energy projects. The sectors controlled by the Government include;

- Development, maintenance and operation of county roads
- Collecting and maintaining vital statistics on county affairs
- Land survey and mapping
- Soil and water conservation

VII Debriefing to EKN: Debriefing Energy Fact Finding mission 24-31 of May 2014

- Contractor is grateful to have been awarded the contract. It is a proof of confidence in the team and we will try to deliver up to the standard expected.
- The introductory meeting with EKN was informative and guiding for the mission's schedule of visits.
- 17 institutions and companies have been visited, despite late appointments and changing agendas of our discussion partners ,a good oversight has been obtained.

General impressions

- The energy field is filled with expectations based on the findings of substantial energy reserves
- The abundant availability of RE sources, which are for free and enduring for ever, do not lead to the same level of excitement.
- There is a huge lack of understanding in Kenya regarding the exploration, exploitation and use of these resources. This lack entails among others: lead times to bring these resources to development, the technical needs to be able to do so, the institutional needs and quality to facilitate the process, the state role vis-à-vis the private sector, the usefulness of planning and how to use energy planning.
- There is a lack of political guidance of the process, allowing for corruption, unclear procedures, sudden changes of the rules for economic sub sectors, bribes etc.
- The GoK is heavily indebted to the extent that WB/IMF do not consider any more loans to the country, thus limiting the country to develop the resources which it has. Government guarantees cannot be effected so big private investment seeking a security in GG cannot be served, effectively making big projects impossible.
- In the short run the GoK can just do non-costing measures to improve the investment environment: Clarify the decentralisation of power to the counties, making the feed-in tariff a functional instrument, smoothening the procedural processes and especially the long lead times.
- In the medium run the GoK should choose for a development path for its society based on either RE or fossil fuels, or some sort of mix between the two. Given the situation of indebtedness selling the resources on the international market would be a good option, bringing in a vast flow of foreign capital. At the same time the emphasis for own energy organization may be laid on RE sources.
- Stopping of the use of scarce resources on impossible mega projects which are not justified by an energy demand worth mentioning in the coming 10 to 20 years is primordial. Decompose the nuclear energy commission, don't think of a natural gas economy fired economy except for some selected sub sectors maybe, no 5000+ MW plans for which there is no market in the foreseeable future, no billion dollar contracts with Arabian oil countries.
- Instead: Work on the enabling environment for foreign investors, reduce the level of untrustworthiness caused by megaplans (e.g. 5000 MW in 40 months) undermining the foreign and national perception of a credible policy making government, undermining even the legitimacy of the institutions.

Preliminary conclusions

- The RE subsectors which have vast potential are:
  Hydro, passive solar design, solar water heaters, PV, wind, biomass technologies (pyrolysis, gasification, anaerobic digestion, etc.) and household waste gasification at bigger waste sites.
- Energy efficiency in industry is at the brink of getting interest. Industry and transport are major sectors to focus upon.
- There is a knowledge gap to be closed in passive solar design of construction and building, improved solar water heaters, PV improvements at the entire chain, wind energy equipment and maintenance.
- In all sectors, consultancy services are needed, especially if banks have to be attracted to a higher extent, for the government facilitation and preparation of policy, for the industries to get acquainted with the best available technologies. Certification and standardization of technologies and equipment needs more specialized companies currently not available in the country. There is no certified laboratory for RE equipment labelling/knowledge to do so is lacking as well.
- Energy service companies in the technical sense are needed for RE and EE alike. The number of existing ones, seem limited and the quality of their services is uncertain.
- Financing energy projects in Kenya from the own banking sector is close to inexistent. Except one bank, experimenting with a limited scheme financed by France can be mentioned. The banks miss the capacity and experience with the energy sector perceiving the latter with an elevated risk profile. All types of flexible financial schemes are needed, including at the micro finance level (where some promising examples already exist at small scale).

Potential intervention fields and modi which can be considered

- There is a need for coordination of the donors: EKN might take the lead to create a consultative body of donors which can be the main platform for the needed policy dialogue with the GoK. Especially the low level of energy knowledge requires a massive campaign to redress the direction of the discussions on reliance on fossil fuels, in papers and other media as well as in the governance sector (national and especially regionally).
- Alternatively, the EKN can break in in the energy sector with high profile initiatives such as: taking part in the soft side of wind energy investments (as was already done in the Turkana wind park); organizing the international community to become a credible partner for all, but above all for the GoK and Dutch industry.
- A clear sector entry strategy should be developed (based on this mission's results and direct consultation with main stakeholders, notably the GoK and Dutch industry community. A mix of traditional trade instruments (as by the BEB before) and aggressive approaches where possible: showing the full magnitude of the Dutch interest to stay in the Kenyan energy sector for a long period to come. If the GoK cannot provide a stable enabling environment the EKN can fill such a gap to a certain extent.
- Participating in a financing instrument (or in the existing French one) would be a very good option with immediate results to be expected, further contributing to an active and creative stakeholder entering at the right level from the beginning, lifting with the lessons learnt by the KAM/bank. Lighting Africa is another example of successful intervention.

- Bringing back initiatives such SE4All at the center stage and keeping them there. Despite policy phrases in favour of RE the GoK seems to dream away with unaffordable LT introduction of gas, oil and coal, while the (international) private sector is hesitant to invest in the country when fighting corruption, political instability and rather uncertain investment climate.

The first part of the work is done – speaking with and mapping of the energy sector in Kenya. Part of the report is on the way to be written according the above lines. The Questionnaire is about ready to be launched when adjusted for the findings in Kenya. A good number of Dutch sector players will be reached when using their branch organizations in the Netherlands, apart from the growing list of individual companies which are mentioned here or there in relation to entry at the African market.

In terms of time schedule we will use the period between June 1st and June 30th for the launching of the Questionnaire, just before the holiday season in the Netherlands is on. During this month there will be less communication with EKN, except on the reading of the Kenyan part in the report. Also the structure of the final report will be sent to you and the Interview Protocol used.

VIII Nuclear Energy in Finland

Nuclear energy in Finland

While not necessarily acting in total isolation in this latest global renaissance in nuclear power as a supposed cheap and clean solution to the ballooning energy demand, the country should be wary of the promise of cheaper and safer designs and technology. While the LCPDP puts capital cost estimates for nuclear reactors at €3,010/kW which is not way off from the predicted 2014 cost of €4,500/kW (nature.com), global activities in the latest surge in development of nuclear energy paint a picture of uncertainty as regards costs. The case of the troubled Olkiluoto 3 nuclear power plant being built by the Areva-Siemens consortium for the Finnish utility TVO comes to the fore. While this was expected to be a showcase of nuclear renaissance featuring modular design that was to herald faster, cheaper and safer new-generation nuclear reactors, the project has since accumulated over 190% cost and 100% schedule overruns and is not expected to commission until at least 2016 (World Nuclear Industry Report, 2014). The case of Olkiluoto is not entirely unique as another reactor, Flamanville, is similarly experiencing delays and cost overruns. These situations make potential lenders see new nuclear power plants as riskier than other conventional power plant investments and thus makes new nuclear plant construction more expensive to finance. Usually the costs of waste disposal for nuclear power plants are not included in the costs and in practice it is the tax payer who bears the cost for dealing with this upon decommissioning of the plant. These costs are considerable for the UK which spends approximately £2.5 billion annually on dealing with the waste at Sellafield, their nuclear reprocessing and storage site (Department of Energy and Climate Change, 2012-2015 Business Plan). It's estimated that total future cost for decommissioning Sellafield itself will be £67 billion (National Audit Office, 2012).

IX International donors in the energy field in Kenya

Energy policy is the government's mandate to develop and implement. However, many projects have been and are carried out through international cooperation in the energy sector in Kenya over the last decades. Most traditional cooperations have had bigger programmes in energy. Currently the main players are IFC, the AfDB, EU (Energy Facility), AFD, DGIS, GIZ (and BMZ) and World Bank.

SE4All

Bigger multilateral programmes like Sustainable Energy for All (SE4ALL) are also directed to Kenya as well as to the entire continent. Surrounding countries are preparing for SE4ALL participation by carrying out baseline studies and planning. With the programme running to 2030, a positive receptive structure will be created which will manage the programme in close cooperation with the Ministry of Energy. The number of the poor not having access to electricity will be cut by half by 2030 (compared to the baseline level to be established). Even the economy's energy intensity will be sliced with 50% under the programme. The programme is funded by the EU and the United Nations and carried out by the EU via framework contracts. These are in place roughly since the beginning of 2014. It is expected that SE4ALL is going to shape the rural electrification landscape significantly. This is only possible if appliances, solar systems and service and maintenance structures emerge which function conform market rules, i.e. with profit making companies selling, distributing, installing, servicing and replacing systems. The pan-African approach will put a strain on Kenya to deliver, in pace with neighbouring countries.

IFC

IFC has a programme in place to promote sustainable private energy sector investment. IFC works in Kenya and throughout Africa via specialized facilities such as the SME Solutions Center (SSC), Private Enterprise Partnership for Africa (PEP Africa) and African Management Service Company (AMSCO). Based on the analysis of the conditions for private companies in the energy sector IFC has a one-shop solution (SME solution centres) to get energy solutions to the poor and underserved. These centres have resulted in significant trainings (6000 SMEs), job creation (over 400 jobs), 27 SMEs incubated among other results[38]. The need analysis of IFC has resulted in 4 major barriers which need to be taken down for energy entrepreneurship to emerge:

1. Access to affordable capital

Smaller businesses generally struggle to attract finances, whether in the form of debt or equity. Traditional long-term bank finance is generally inaccessible to small businesses because they lack the required collateral. Venture capital is not an option either as financiers consider rates of return and the magnitude of small companies not justifying the risks. To address these challenges, IFC has engaged Business Partners, a fund manager to set up the **Business Partners International risk capital fund** as the access to finance component of the SME Solutions Centres. The funds are coming from a range of multilateral and private sources.

Support is extended to qualifying small enterprises in the form of equity, quasi equity, and debt financing. Repayment and exit (where equity is provided) is generally achieved from the cash flow of the investee companies.

[38] WWW.ifc.org: IFC SME Solution Centres these centres should not be confused with the UNDP programme which was running earlier (from 2006) and which was based on the idea of District business growth centres which was clearly focusing on the district level (at least 6 districts were served).

2. Business information

The centres provide various information products and services on a commercial basis. These include access to reliable market information, broadband internet access, training facilities, database management, temporary office services, meeting rooms, and research facilities. The centres also operate fully-fledged incubation centres that enable small enterprises to pool and share resources under one roof.

3. Capacity Building

Specific services provided under capacity building include assistance in setting up a new business, existing product enhancement, export development services, training, coaching and mentoring. Funds for capacity building are availed on a cost sharing basis through partial subsidies to participating firms.

4. Business enabling environment

By drawing from other IFC resources, such as the IFC PEP-Africa business enabling environment team, the centres are able to engage in policy advocacy on behalf of the SME sector.

This set of cohesive IFC programmes sounds promising, but the Kenyan Association of Manufacturers is somewhat sceptic about the results delivered so far, after 2 years. This has not been confirmed by other sources though.

GIZ

The German cooperation (GIZ) is engaged in a multi annual programme ((EnDev-K; 2006-2014) called Energising Development Kenya Country Programme. Financed by a number of European cooperations – among which also DGIS – the objective is to accelerate 'Access to clean cooking and lighting energy for rural households'[39].

The programme is focusing on biomass energy use which is the main fuel source at the country side. It covers 20 counties in western, central and parts of lower eastern Kenya. EnDev-K works in partnership with the Ministry of Energy and Petroleum and the Ministry of Agriculture. Through the latter, it can reach out to the rural target groups using the ministry's countrywide network of extension services in its Home Economics Department. Activities of EnDev-K include support for the Kenya Bureau of Standards in establishing new standards for the approval of biomass-burning stoves. It is also working with the Energy Regulatory Commission on the development of controls to regulate the actors, design and use of improved cooking stoves.

The programme focuses on building the technical, entrepreneurial and organisational capacities of those involved in the production, marketing, installation and wider take up of improved stoves, and it encourages these stakeholders to take a commercial approach. Technical manuals for stove constructors are developed and constructor businesses are linked to financial institutions. It also promotes a national campaign of consumer education. Moreover, it has supported the formation of an association for the various actors in this area – the Improved Stoves Association of Kenya. In addition, in 2012, EnDev-K launched a component to promote the use of small solar lighting systems that have been approved by Lighting Africa.

[39] See GIZ web page for Kenya energy projects

By the end of 2012, some 1.4 million stoves had been installed around Kenya, serving 7 million people. As a result of the commercial approach of the project, 4,200 people are now working as self-employed dealers in stoves. Meanwhile, efforts are ongoing to continue improving the quality and performance of the new stoves.

The awareness raising campaign has helped to improve the level of general interest in the stoves, and owners have also learned to use them more effectively. Special target groups have been reached by the project, including farmers, who have learned about the stoves through the promotional activities of agri-business firms, and people living with AIDS, nearly 900 of whom now have new stoves due to the EnDev-K's mainstreaming work. The associated annual carbon emission reduction is estimated to be about one million tonnes of CO2-eq.

In the second component of the programme, started in April 2013, 300 solar entrepreneurs had received their training. Nearly 9,200 solar products have now been installed, representing an outreach for solar products of almost 7,700 people.

GIZ also observes that there is still no implementation framework for the political reforms laid down in the constitution. One of the key challenges is to achieve decentralisation. This should help improve living conditions and strengthen political accountability.

Germany is an important donor to Kenya. At the government negotiations in 2010, Germany pledged funds totalling 139 million euros to Kenya for direct intergovernmental cooperation in the period from 2010 to 2013. The cooperation includes the fields of private sector development in agriculture, development of the water and sanitation sector and development of the health sector. Other areas in which the two countries are working together are reform of public financial management, education in poor urban areas, and renewable energy (among which EnDev-K) and energy efficiency.

USAID

On June 30, 2013 in Cape Town, South Africa, President Obama announced Power Africa — an initiative to double the number of people with access to power in Sub-Saharan Africa. Power Africa will achieve this goal by unlocking the substantial wind, solar, hydropower, natural gas, and geothermal resources in the region to enhance energy security, decrease poverty, and advance economic growth.

Power Africa works with African governments, the private sector, and other partners such as the World Bank and African Development Bank in six focus countries — Ethiopia, Ghana, Kenya, Liberia, Nigeria and Tanzania — to add more than 30,000 megawatts (MW) of cleaner, more efficient electricity generation capacity. By expanding mini-grid and off-grid solutions and building out power generation, transmission, and distribution structures, Power Africa will make electricity access available for 60 million household and business connections. At the same time, Power Africa will enhance energy resource management capabilities, allowing partner countries to meet their critical energy needs and achieve sustainable, long-term energy security.

EU

The EU has several energy projects running in Kenya. Those projects are financed under the first and second Call for Proposals of the 9th and 10th EDF respectively and have running times of 4 years, although quite some projects need more time to reach closure. The following projects are running:

1. The Italian COMITATO INTERNAZIONALE PER LO SVILUPPO DEI POPOLI ONLUS is supporting to and expansion of Malindi Biofuel Cluster, which is about Jatropha farming.
2. The Dutch Foundation HIVOS (HUMANISTISCH INSTITUUT VOOR ONTWIKKELINGS SAMENWERKING) has a project on Improved Cook Stoves for Households and Institutions Project.
3. The GLOBAL NATURE FUND GNF is developing a solar energy project for rural Kenya.
4. The CATHOLIC AGENCY FOR OVERSEAS DEVELOPMENT TRUST is working on a Community Based Green Energy Project.
5. TRIODOS FACET BV (today Enclude) is involved in Financing Energy Access through expanding Energy Markets through Microfinance–Energy Enterprise.

It shows HIVOS and the Triodos Facet as project developers, which thus have interest and experience in the country.

AFD

The French cooperation (AFD) is engaged in the set-up of a financing mechanism to overcome the barrier of access to finance for the private sector. The programme is called the RTA Programme for Financing Renewable Energy & Energy Efficiency. (The programme is explained in detail at www.rtap : Manual of Procedures).

The fund contains €30 million or $40 million. It targets SME's with project support needs of maximum 6.5 en installations of 5 MW maximum. Sometimes also RE plus EE in process improvement is targeted. 9 projects carried out in 2.5 years of existence of the Fund (since September 2011), which is run by Kenta Association of Manufacturers (KAM) for the French, but under KAM's own aegis. The finance is put at a bank by AFD. There are 4 hydro projects, 1 solar (1 MW solar farm at a tea factory), 2 EE in industry and 1 biogas project. The team has three members, basically engineers and when needed a financial specialist is hired. The lending rate is 4.1 to 5.6 % which is well under market rates, which are 9+ %. The programme is recently positively evaluated and a second tranche is requested from AFD. Also Danida is contributing to this KAM instrument (focusing on technical studies), while DFID is on its way to join the programme (focus will be on regulatory challenges). KAM is doing the due diligence for the bank (Cooperative Bank) ending up in an advice at the Bank's lending committee, which does the financial closure.
Very recently the same programme model is launched in Tanzania and Uganda. The programme draws much attention in the Development Cooperations and the SME's alike. There are project requests in the pipeline covering million €110 in programme support, which means around 20-22 projects and a reported total investment of over 1 billion Euros.

The fund delivers a maximum 12 years' lending period effectively meeting the barrier of too short lending windows (Even Coca Cola does not get more than 7 years of lending period!) as well as the barrier of too highly priced money in Kenya. A grace period of one year is also helpful. The banks in Kenya are not familiar with the energy sector and do not know how to carry out their due diligence. That is why so very few banks have entered the sector. The technical assistance of KAM to the bank overcomes the hurdle of absent familiarity with the sector. Peculiar detail is Stanbic bank, which was the first partner of AFD. After 19 months of inertia, the French decided to take the money away there and find another bank in Cooperative bank. This is called typical for Kenyan banks: They know in which

sectors they want to earn their money, but at the same time they engage in something for which no action is taken, losing 1.5 years for the client.

Sometimes problems occur between the project developer who wants stakeholdership and a return on investment, while the financing party sometimes also wants more than a return on investment only. KAM has a list of equity providers which KAM is willing to share with the mission.

Other international donor initiatives

There are more International Cooperation initiatives on-going in the Kenyan energy sector. Mentioning is made of WB/IDA, GEF, EU Energy Facility and JICA. There seems to be some formalized donor coordination in some sectors. The Kenya Joint Assistance Strategy (KJAS) reflects the result of donor and Government dialogue towards harmonising their programmes in line with government policies, on the basis of three key principles, namely; support to the country-owned and government-led strategies, more effective collaboration between donors and the government including division of labour, and focus on results and outcomes. The Roads and Transport Sector Donor Group was created under the Harmonisation Alignment and Coordination (HAC) initiative following the Paris Declaration on Aid Effectiveness. It consists of 13 active Donors (AfDB, AFD, China, DANIDA, EU, Japan International Cooperation Agency (JICA), KfW, UNDP, World Bank). The chair of the Group is held on a two-year rotational basis, with the JICA currently chairing. Progress has been made recently towards a new perspective of sector and donor coordination with the Ministry of Roads chairing a joint Government/Donor meeting under its new policy and regulatory role.

The Roads 2000 Maintenance Strategy incorporates a well-structured coordination and monitoring mechanism including joint annual missions and coordination meetings involving Donors.

Moreover, it is shown that donors seem to be willing to join other cooperation's if a successful model is occurring as is the case with the AFD fund creation.

X Process description of the questionnaire

On May 15, we have participated in the Workshop on Climate Finance in Kenya, organized by HIER. Of all the participants, there was only one representative of a Dutch firm interested in investing in the Kenyan energy market, namely Transmark Renewables. We established contact with ECN, who is working on a relevant study in Kenya (NAMA). We have requested information on the names and responses they have received from Dutch companies on investing in Kenya, which they could not share with us due to confidentiality issues. Their study is focussed on geothermal energy exclusively. ECN did deliver a list with Dutch companies in the RE sector which has been used in our approach.

In week 24 (9-15 June 2014) we have begun our research by approaching eight industry associations in the energy sector, each representing a different sub sector. Based on a schedule to ensure an even spread of calls, daily calls have been made to the different industry associations. After two calls, call-back requests have been made to increase chances to communicate with the relevant employee.

Industry associations approached

Below an overview of the various industry associations, their mandated sub sector and (as far as possible) the number of members they represent.

Cleantech Holland is the Dutch export platform for sustainable technological products - concepts and innovations. In 2009, the platform was established by the *Vereniging FME-CWM* (the largest Dutch technology industry association), the Dutch Ministry of Economic Affairs, Agriculture and Innovation (At present the Dutch Ministry of Economic Affairs) and the Ministry of Infrastructure and Environment. Cleantech Holland promotes the products and services of Dutch companies involved in clean technology on international markets and aims to further cooperation between industry, governments and knowledge institutions. At present, 26 companies are integrated in the organization.

Dutch Heat Pump Association (DHPA): the DHPA is the Dutch trade organization for providers of heat pumps and related systems and promotes the use of heat pumps in the built environment. It represents 12 providers.

Holland Solar is the Dutch association that promotes the interests of approximately 130 producers, dealers, fitters, advisors and architects involved in solar energy.

The **Netherlands Bio-Energy Association** (Platform Bio-Energie) is the Dutch trade organization for Bio-energy and represents the interests of all (36) Dutch bio-energy companies.

Soil Energy NL (Bodemenergie NL) is the Dutch trade organization that represents the interests of 66 companies involved in drilling, engineering, installation and advice.

The **Dutch Association for Energy from Water** (Nederlandse Vereniging voor Energie uit Water, EWA) aims to influence the Dutch energy and industrial policy in order to ensure that a substantial part of future energy use is generated through hydroelectric energy, tidal movement, tidal basins, waves, osmosis, aquatic biomass and thermal energy from water.

The **Dutch Wind Energy Association** (Nederlandse Wind Energie Associatie, NWEA) represents the interests of organizations involved in wind energy. Although the list of members is not public, premium members are Nuon, RWE, Eneco, Raedthuys Groep and Eneco.

Participation industry associations

Despite our efforts and unexpectedly, no less than four industry associations indicated that they did not wish to share the survey with their members. Through the three associations that did participate, we reached in total 129 renewable energy companies. The below table provides an overview of the participation of the trade organizations.

Table A. Overview of industry associations

Industry association	Participation
Cleantech Holland	Yes
Dutch Association for Energy from Water	No
Dutch Heat Pump Association	No
Dutch Wind Energy Association	No
Holland Solar	No
Netherlands Bio-Energy Association	Yes
Soil Energy NL	Yes

After the first phone contact, Cleantech Holland wished to internally discuss the release of the survey. After several follow-up calls and an urging e-mail from the Ministry of Foreign Affairs, Cleantech Holland was very forthcoming. They sent the survey to all members, put a message on the website and included the message in their newsletter. In addition, Cleantech Holland suggested to us to post the message in the Linkedin group "Energy solutions for developing and emerging economies," which we followed up. Despite all efforts, only one completed survey was received through Cleantech Holland.

Both Soil Energy NL and the Netherlands Bio-Energy Association immediately agreed to send out the survey, yet we did not receive any response from their members. The non-response though cannot be interpreted as no soil energy or biomass energy company that is a member of one of these industry associations is interested in export to East Africa. Chances are fairly high that the survey slipped through alongside the usual work load or that the relation between perceived pay-off and the filling out of the survey was too far off.

Due to the absence of the relevant staff member, it took one and a half week before constructive contact with Holland Solar was established. The contact person from Holland Solar declared that although it represents approximately 130 companies, only 10 to 20 companies would be interested in export, as the main market for most of these companies are the Netherlands. From these 10 to 20 companies a smaller proportion might consider export to Africa, since most of these companies do not have the capacity (financial means, personnel but above all the knowledge) to enter new markets with totally different market circumstances. It is therefore one can conclude that these companies are interesting candidates to be identified to see what needs to be organized to bring them to the eastern African market.

The contact person from the Dutch Association for Energy from Water (Vereniging voor Energie uit Water, EWA) first wanted to discuss the release of the survey with a fellow board member in order to

decide whether it would be relevant for their members. After various calls from our side and an e-mail from the Dutch Ministry of Foreign Affairs urging the EWA to send the survey to their members, the contact person decided to decline. In an informative phone call he explained that the technology developed by most of the members of EWA is still in the R&D phase and not yet commercially viable. Companies in this phase use the Netherlands as a test site as it offers all kinds of water related energy sources and is nearby. He did discuss the survey with the one member that is active internationally, but this company was also not interested as it focuses on international markets with high electricity prices, necessary for it to be profitable, such as for example Canada. They do not consider Kenya to have a profitable price level for electricity. It also shows that the Embassy needs to have a high level of knowledge – in this case electricity price levels for different classes of users in Kenya – to be able to raise interest in such a company.

The representative of the Dutch Wind Energy Association refused to release the survey among their members as they only represent the interests of the wind energy industry in the Netherlands and do not wish to extend their geographical coverage.

At first, the contact person from the DHPA wished to discuss the release of the survey internally, yet after various phone calls with the DHPA they ultimately decided not to share the survey with their members because they are mainly oriented on the Netherlands. Considering the aim and installation of heat pumps, export to East Africa is currently not of interest due to a lack of demand prompted by cost considerations.

Due to the initial lack of response from the members of the industry associations, we decided on two changes in the data collection process; 1) the extension of the deadline from the 25th of June to the 13th of July in order to give interested parties some extra time; 2) we started to approach individual companies directly by phone and e-email. This resulted in several extra surveys returned.
Some companies said right away they were not interested in export or expansion; others politely agreed to fill in the survey but never returned it.

We have approached 24 individual companies, some already active in Kenya, the majority of these active in the Netherlands only. We concentrated on solar and wind energy as the industry associations aimed at bio-energy and soil energy already shared the survey with their members and the hydro sector is still in its infancy. Below a table of the international and Dutch companies approached individually:

Table B. Overview of international companies

Company	Solar	Wind	Bio-energy	Geothermal	Hydro
Lake Turkana Wind Power		x			
Carbon Africa	-	-	-	-	-
S3C	X				
Barefoot Power	X				
Windgen Power		x			
d.light	X				

Table C. Overview of Dutch companies

Company	Solar	Wind	Bio-energy	Geothermal	Hydro
Ubbink	X				
Transmark Renewables				X	
Eurotron	X				
Van der Valk Solar Systems	X				

Simgas			X		
IF Technology				X	
Ndassie	X				
HoSt			X		
Riwik B.V.	X				
Biomass Technology Group (BTG)			X		
Suzlon		X			
Twentsche Kabelfabriek	X	X	X	X	x
Wind Energy Solutions B.V.		X			
Ballast Nedam Engineering		X			
Bright Composites B.V.		X			
CTC Group B.V.		X			
IHC Hydrohammer B.V.		X			
Tres4 B.V.		X			
Van Oord Offshore Wind Projects		X			

From the direct contact with the companies, it was learned that the geographical coverage of suppliers of materials, for example IHC Hydrohammer, which designs and builds hydraulic piling hammers used in the onshore and offshore wind industry, is mainly determined by the companies they supply. Thus, the decision to export or expand is highly dependent upon their customers.

Response

We received one survey through the message on the website of Cleantech Holland (Greenspark B.V.). The response on the direct approach was a bit higher (9 out of 24 = 33%); eight out of nine companies that filled out the survey were individually approached (S3C, Riwik B.V., Ballast Nedam Enigneering, d.light, Eurotron, SIMgas, Transmark and Ubbink). This shows that in a follow-up action on this study only an individualized approach should be considered given the relatively good response density of 33%. The following companies have returned the survey:

- S3C
- Riwik B.V.
- Ballast Nedam Engineering
- d.light
- Eurotron
- Greenspark B.V
- Ubbink East Africa Ltd.
- SIMgas
- Transmark

Despite the fact that we approached 152 renewable energy companies, either through an industry association or directly, the number of returned surveys is relatively low. This should not be taken as an indication of low interest in the East African market. Low knowledge levels regarding these markets, overstrained small organizations in rather small companies, too high risk profiles, the long run between filling out a questionnaire and starting up new activities are just a few of possible explanations for the low response grade.

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