



Partnership Ready Ethiopia: Water supply and wastewater treatment

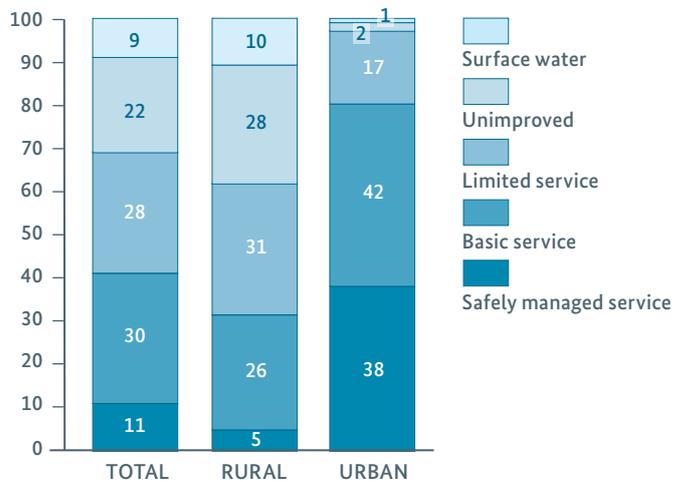
Sector overview

The Federal Democratic Republic of Ethiopia is a landlocked country, split by the Great Rift Valley, in the Horn of Africa. The Ethiopian highlands' water resources are the most important contributor to the Nile water basin, providing livelihoods for hundreds of millions of people both upstream within the country and downstream in Sudan and Egypt. Next to the Blue Nile, a number of other lakes and rivers form important water resources for Ethiopia and other neighboring countries South Sudan, Kenya, Somalia, Djibouti and Eritrea.

Ethiopia is one of the fastest growing countries in the world, both concerning economic development and demographic dynamics. Naturally, with larger population, an ongoing urbanization and more industrialization, the pressure on existing natural resources rises. Due to Ethiopia's geographical location and its diverse territory, the country is often faced by natural calamities such as periods of prolonged droughts and, on the reverse, flooding – extreme weather events that are forecast happen more frequently caused by ongoing climate change. This results in an accelerated need for infrastructure that enables a sustainable use of water. A range of legislative, organizational, technical and financial hurdles have yet to be overcome in order to meet this goal.



According to the United Nations Children's Fund (UNICEF) and World Health Organization (WHO) report published in 2019, less than half of the total population in Ethiopia has at least basic service to drinking water. Access to drinking water that is considered safe by international indicators is only available to around 11% of the population. The latter covers a total of 38% of those living in urban areas, and only 5% of the rural livelihoods. The remaining part of the population is using water access methods considered unsafe, e.g. surface water abstraction or rainwater harvesting, as the chart below shows.



Source: WHO/UNICEF JMP report

To address these challenges, the Ethiopian government has embarked on a long-term strategy to improve the sector's performance, with the objective of safely supplying water to all Ethiopians, reducing the impact of wastewater on natural resources and safeguarding food production through enhanced irrigation methods. Alongside broader economic reforms, the role of the private sector is being increasingly considered in Ethiopia. The demand for quality equipment and services grows, with users ranging from individual consumers to the private and public sectors, as well as international donor organizations.



The different segments within the water sector can be subdivided into three groups:

- I. Public Water Infrastructure and Supply**
- II. Water Installations and Equipment in the Construction and Buildings Sector**
- III. Industrial Wastewater Treatment.**

I. Public Water Infrastructure and Supply

The Federal Government of Ethiopia acknowledges the challenges within the water sector and is sharpening the focus on developing water policies and adjusting the necessary institutional set-up. The Federal Ministry of Water, Irrigation and Electricity (MoWIE) is responsible for the management of water resources, water supply and sanitation as well as large and medium scale irrigation. Furthermore, the Ministry supervises, regulates and oversees the water, irrigation and power sectors on a federal level.

In the past years, the country has made progress in ensuring that larger parts of the population gain access to safe drinking water. Nevertheless, despite a significant increase of access to safely

managed drinking water in absolute numbers, the constantly high population growth diminished some of the progress made if measured on a percentage base. The portion of population having at least limited access to drinking water in their households is estimated to stand at around 70%. Nevertheless, the supply and quality standards vary. According to international definitions, only around 11% of the Ethiopian population have gained access to drinking water classified as “safely managed”. With more domestic and international funds channeled into the water sector, this number has been constantly growing over the last years and is expected to continue so.

With a mere 7% of the population having access to improved sanitation infrastructure, international donors are putting more emphasis on progressing within this sector. A World Bank-led initiative called “One WASH” has committed significant funds to improve sanitation infrastructure throughout the entire country, focusing on urban and rural areas as well as building stronger resilience against adverse effects of climate change. A cross cutting range of actions aims at erecting decentralized infrastructure. With an array of measures, the effectiveness of existing structures and processes is set to improve on different administrative levels and with different sector institutions. This programme includes construction of new water supply schemes, demand-based organizational set-ups, more sophisticated forecast and monitoring mechanisms, and improved household sanitation facilities, among others, throughout the whole country.





So far, only the capital Addis Ababa operates a domestic wastewater treatment facility. Within the numerous donor led activities, urban wastewater treatment is set to be significantly expanded. New wastewater treatment facilities are to be set up in all major Ethiopian cities with the only significant existing one in Addis Ababa being upgraded as part of the strategic sanitation initiatives of the World Bank.

→ INSTITUTIONAL FRAMEWORK

The Ethiopian Water Resources Proclamation, published in the year 2000, covers a number of topics within the sector. For the government, it was instrumental to declare in which manner water resources have to be protected and managed. The proclamation covers the usage of water, defines powers and duties of supervising bodies and lays out methods for the settlement of disputes.

With its nine self-governing states, two chartered cities and the federal level taken into account, the competencies of the public water infrastructure are additionally split among these different political levels. Regional legislative assemblies and governmental structures initiate and implement water policies without necessarily involving the federal level. Regional authorities and state agencies govern, regulate and administer the respective water sector themselves. With relatively old federal policies that comprise of little operational details and traditionally strong regional roles, the distribution of responsibilities is sometimes unclear, resulting in an overlap of tasks and activities between the Federal and Regional Governments. The regional role is particularly paramount in the regulation of tariffs, quality standards and other directives for the water sector that are by large decided at the state level.

Despite regional differences, each state generally commands four key institutions that are responsible for their respective mandate in the water sector.

On the water resources development site, the **Regional Water Bureaus** oversee the usage of resources, including the granting of permits for water extraction. The Federal Government is also active in this field through the Water Basin Authority attached to the Federal Ministry of Water, Irrigation and Energy. Therefore, overlap of mandates is a particularly conflicting topic. Up to now, price mechanisms to steer the exploitation of water resources are in the early stages of development. Policies currently under development prioritize their implementation in the irrigation sector. The

Regional Water Bureaus oversee the erection of water abstraction infrastructure, e.g. for groundwater pumping systems, and conduct the bulk of economically relevant activities in this sub-sector. As these institutions tender respective works, they are important partners for the private sector.

Another one of the four key institutions that exist in most states are **Agencies for Design and Supervision of Water Projects**. They can be compared to state-owned engineering consulting firms for the water sector. They play a role in the development of new water infrastructures by using in-house expertise to lay out the technical concepts. Subsequent tenders are based on their technical designs. Additionally, infrastructure works are overseen by them.

As a third key institution, an **Agency for Water Works Construction** is typically present at the state level. This agency is usually a public enterprise carrying out the majority of the civil works for the water sector. Some services, comprising of roughly a quarter of the contracted works, are usually outsourced to private sector companies. This particularly relates to technically more complex electromechanical works.

As a fourth group of regional key institutions, **Water Utilities** are the main organs responsible for water supply. The number amounts to roughly 900 countrywide – by and large equivalent to the number of municipalities. Water utilities are in charge of operation, maintenance and repairs of water infrastructure and related equipment. The tariffs usually cover operation and maintenance of the infrastructure only. Based on the Ethiopian Constitution, a pro-poor component within the utilities' tariffs is a compulsory component that has to be put in place. With high levels of population classified as poor, this results in a meager revenue stream also affecting the utilities financial performance. The business volume generated by utilities is therefore generally of lower relevance to the private sector. Investment budget for improvement and expansion of infrastructure is usually covered by funds earmarked for the water sector, often provided by international donors and channeled through the National Government.

As a relevant portion of water sector related economic activities is undertaken on the regional level, it becomes more crucial for private sector players to respond with local presence. This could be obtained through a partnership with a company with specific local knowledge – proficiency in the regionally spoken language being part of this.



II. Water Installations and Equipment in the Construction and Buildings Sector

Ethiopia is one of the fastest growing economies worldwide, with its capital undergoing a rapid transformation towards becoming an international metropolis. Moving beyond classic technical solutions for water supply in buildings, e.g. gravity based water usage through roof-based tanks, more buildings are being constructed according to international standard. This requires state-of-the-art systems with more sophisticated designs and technically advanced equipment. Out of this broader development, opportunities arise for numerous sectors, e.g. firefighting systems or boosting pumps, whose application is only now leaving its infancy stage.

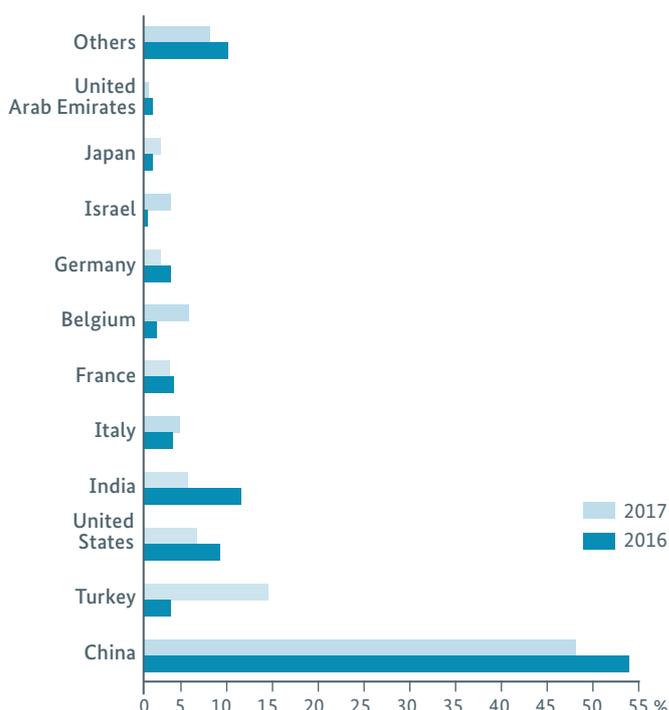
The capacity of piped water to households still remains low. As shown below, progress has been made in the last decade with the equipment used for households' access to drinking water. The population with piped water to the household just surpassed a third of the households.

The Ethiopian market for water equipment is as diverse as the general real estate sector. It varies from small, low-cost developments with barely any electromechanical equipment up to modern skyscrapers that require advanced technical designs. The private sector currently comprises of around thirty to forty companies that offer design and installation services. Due to general market restrictions, foreign companies competing with domestic ones only have a loose grip on the market. Partnering with a qualified local company is therefore even more crucial than in other markets.

So far, the domestic production of materials and equipment used in the water sector remains minimal and is limited to a few standard components like plastic tubes or fittings. Import of the material used in the country is prominent from different sources, with China holding the top position. The graphs show the different import partners, as well as the imported material for the water sector in Ethiopia comparing the years 2016 and 2017.

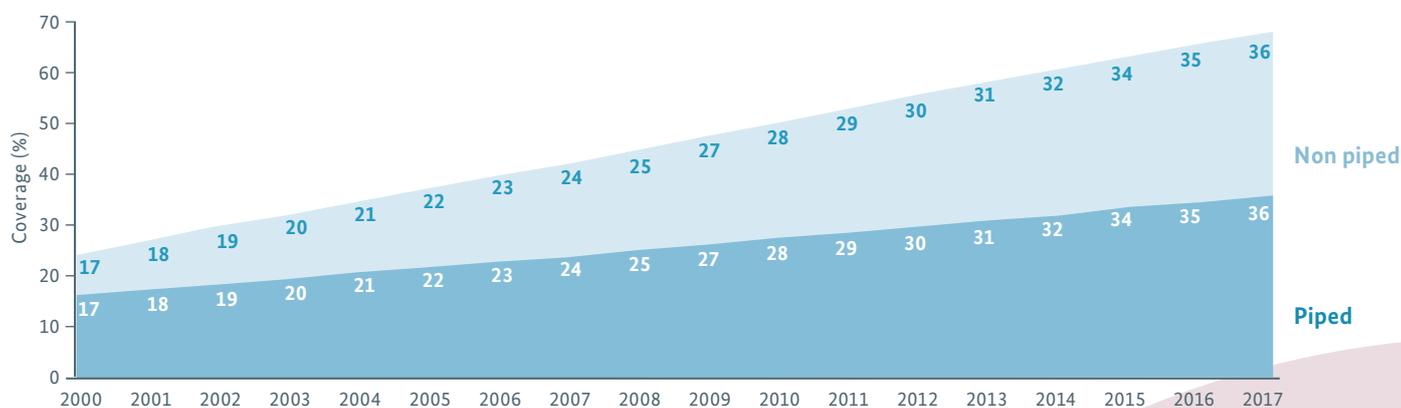
Import Partners 2016/17

(Source: Overview of the Ethiopian Water Sector 2019, Veritas)



Coverage of piped and non-piped drinking water

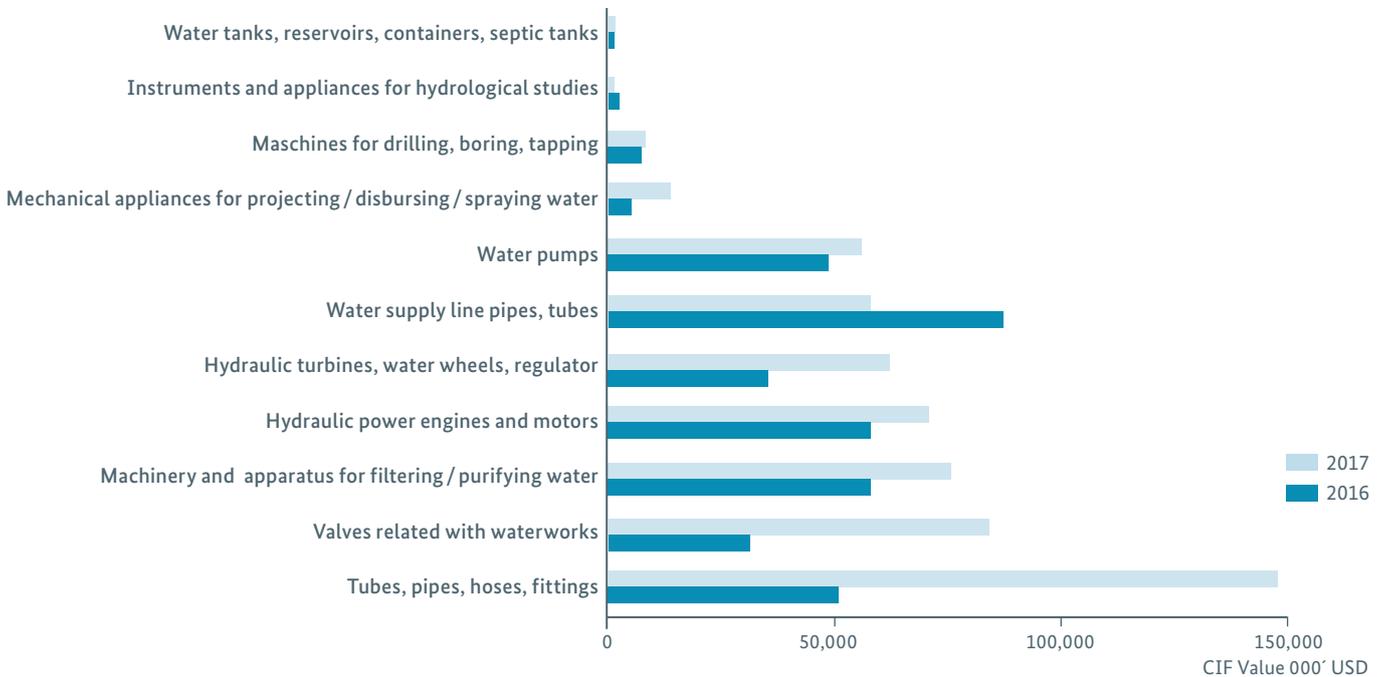
(Source: WHO/UNICEF JMP report)





Value of Water sector related imports in Ethiopia 2016/17

(Source: Overview of the Ethiopian Water Sector 2019, Veritas)



III. Industrial Wastewater Treatment

Ethiopia aims at being a manufacturing hub at the forefront for light industry, particularly in textiles. The groundwork has been laid by the country's affordable electricity prices, one of the cheapest workforces worldwide, and the politically-backed establishment of export oriented industrial parks in different parts of the country.

Ethiopia strives for world class eco-industrial parks with complete infrastructure to improve the investment climate, promote the manufacturing sector in the country and enhance the country's exports. In 2014, the Government established the Industrial Parks Development Corporation of Ethiopia (IPDC) with a mandate to develop and operate industrial parks in the country. To date, IPDC has developed ten industrial parks. Private initiatives to set up industrial parks complement the efforts on Ethiopia's pathway to industrialization.

With the goal to meet international environmental standards, each of the publicly run industrial parks is equipped with internal wastewater treatment plants. Before construction, they are usually contracted as turn-key projects. Oftentimes, the design comprises of treatment for both domestic and industrial wastewater. The existing wastewater treatment plants of the Industrial Parks Development Corporation (IPDC) are listed below. Next to the publicly run wastewater treatment plants, the significance of wastewater treatment gains also traction among private industrial parks, as well as domestic industries operating outside of these parks.

The Natural Resources Stewardship (NatuReS) and Sustainable Textiles Programmes are working together with IPDC on promoting sustainable water use in its industrial parks. NatuReS is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ), the European Union and the UK Department for International Development (DFID). The Sustainable Textiles Programme is funded by BMZ. Both programmes are implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.



Industrial Parks Waste Water Treatment Plant

(Source: IPDC)

Size of Waste Water Treatment Plant			
Name of IP	Domestic (m ³ /day)	Industrial (m ³ /day)	Waste Water Treatment Plant Technology
Bole Lemi – I	-	1,500	Advanced Conventional
Bole Lemi – II	3,000	14,000	Advanced Conventional
Mekelle	2,500	3,000	Advanced Conventional
Hawassa	3,000	8,000	Zero Liquid Discharge
Adama	3,000	8,000	Zero Liquid Discharge
Dire Dawa	2,000	4,000	Zero Liquid Discharge
Kilinto	1,000	13,000	Zero Liquid Discharge
Kombolcha	2,500	1,500	Advanced Conventional
Jimma	1,500	1,000	Advanced Conventional
Bahir Dar	1,500	1,000	Advanced Conventional
Debre Birhan	2,000	1,500	Advanced Conventional

The Environmental Protection Authority (EPA) is responsible for federal level environmental protection by formulating the national environmental policy. It is also responsible for making sure that other governing bodies are implementing consistent policies. Concerning water quality, the environmental policy follows a cross-cutting approach – acknowledging the necessity to protect water resources in order to adequately fulfill a wide range of societal and environmental demands. Industrial water use is particularly referred to. The Ethiopian Water Resources Proclamation puts the current Ministry for Water, Irrigation and Energy in charge to ensure that sewage and industrial effluents do not harm water resources in regard to their functionality for human usage. Additionally, and much more specific, the Compulsory Ethiopian Standard for Drinking Water Specification (CES-58) outlines the physical, chemical, and bacteriological requirements of water for drinking and domestic purposes; these specifications generally follow international benchmarks.

With generally stringent water pollution guidelines, outlined in the water, environment and health legislation, actual law enforcement still has to keep up. The high costs and the oftentimes insufficient enforcement lead to mixed results in an otherwise developing sector. On the positive side, with mounting pressures from affected population that is basing their demand on existing regulations and policies, water polluters are increasingly obliged to invest in respective infrastructure. On the other hand, loopholes are being sought and wastewater treatment plants are designed faultily, operated only irregularly, or built substandardly.

Constraints and Opportunities

→ BUSINESS CONSTRAINTS

■ Lack of skilled labour

Lack of skilled labour is a challenge for the country. This results at times in blatantly substandard installations in the water sector. The Ethiopian Investment Commission published the human resource management guidelines to tackle this topic.

■ Foreign currencies

The ongoing Forex hurdle is a challenge for foreign investors and local contractors. Equipment, in the water sector particularly electromechanical equipment, needs to be sourced from abroad in foreign currency, which often at the same time cannot be obtained by local companies. Getting foreign currencies in and out of the country has been an ongoing challenge over the past years.

■ Turn-key projects

Despite growing brand recognition, turn-key projects are often sourced for from Asian countries, making project access challenging. As an example, civil works are often undertaken by foreign contractors sourcing equipment from their home markets. This makes an access to these markets challenging for companies domiciled in different countries, like Germany.

■ Electricity prices

Electricity prices are unsustainably cheap and lead to low requirements for energy efficient equipment. Especially utilities often use outdated electromechanical equipment like inefficient pumps that consume high amounts of energy and have therefore long been phased out in other markets with higher electricity prices.

→ BUSINESS OPPORTUNITIES

■ Rapid growth

Ethiopia is a fast-growing country both concerning demographics and economy, traditionally notable in its capital city Addis Ababa, increasing so in secondary cities and regional centres. Structures are put up throughout the country, with a growing number being high rise constructions. These buildings require water equipment technologies like advanced pumping and firefighting systems that are new to the sector requiring a different technical approach.

■ Brand awareness

In Ethiopia, Germany is perceived as a reputable supplier of electromechanical and other technologically sophisticated equipment.



■ Private sector initiatives

With the private sector largely at the helm, an increased focus on life cycle costs allows international equipment suppliers to position their brands in the market. These brands have already gained a significant market share, both in private and public sector. The rising demand for advanced technologies and designs allows suppliers to tap into newly developing markets. Expertise is still lacking and can be developed through partnerships in between foreign and local companies.

The NatuReS programme supports and facilitates public-private partnerships in Ethiopia, aiming to increase water security and improve management of natural resources. Thanks to its extensive network it can also assist companies new to the Ethiopian market in linking up with local businesses and other partners.

■ Government and priorities

The Government has taken action with increased priority to tackle challenges faced by the water sector. These include improving sustainable infrastructure to ensure that the rural population gains further access to water and sanitation and enhancing capacity and financial autonomy of towns and cities. International donor organizations are supporting these efforts through grant programmes focusing on improving the water supply and, increasingly, sanitation services. With more advanced designs and technological solutions, more expertise currently not yet available locally, is needed.

■ Reforms within the Water Sector

The water sector is gaining more and more attention from the private and public sector as well as from international donors. With more water connections, rising urbanization and further reforms targeting a more efficient sector are accepted as common sense – both on the national and regional levels. One example is the current planning of a national regulatory body to govern the water resources sector.

BEST PRACTICE

The **Natural Resources Stewardship Programme (NatuReS)** is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ), the European Union and the UK Department for International Development (DFID). As a continuation of the International Water Stewardship Programme (2013-2019), NatuReS supports private-public-civil society partnerships in managing the natural resources they need for sustainable growth and better livelihoods. Focus areas include the improvement of resiliency in catchments, cities, industrial zones and the promotion of circular economies. NatuReS is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The programme is active in Ethiopia, South Africa, Tanzania, Uganda and Zambia.

www.giz.de/en/worldwide/81450.html



Sources and useful links:

- WHO/UNICEF JMP report
www.washdata.org
- Federal Ministry of Water, Irrigation and Electricity (MoWIE)
www.mowie.gov.et
- Industrial Parks Development Corporation
www.ipdc.gov.et
- Alliance for Water Stewardship
www.a4ws.org
- Target market analysis Ethiopia: Water management (available in German)
www.ixpos.de/IXPOS18/Content/_SharedDocs/Downloads_neu/BMWI-MEP/2019/bmwi-mep-zielmarktanalyse-aethiopien-wasserwirtschaft.pdf?v=2



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Economic growth creates jobs, improves people's incomes, and promotes innovation. That is why the United Nations 2030 Agenda provides for the active involvement of the private sector in the implementation of the Sustainable Development Goals (SDGs). The Global Business Network (GBN) Programme encourages local and German companies to get involved in sustainable economic development in selected countries in Africa and Asia. Via Business & Cooperation Desks the GBN-Coordination provide information, advice and guidance for businesses on existing support, financing and cooperation instruments of German development cooperation. The GBN-Coordination work closely with the German Chamber of Commerce Abroad (AHK) regional offices. The GBN is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

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NEW MARKETS – NEW OPPORTUNITIES: ETHIOPIA

In order to support the sustainable engagement of German companies in emerging and developing countries, Germany Trade & Invest (GTAI), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the German Chambers of Commerce Abroad (AHKs) as well as other partners combined their expertise in the publication series “New Markets – New Opportunities”.

The booklet shows companies the economic potential of future markets as well as the funding and consulting opportunities offered by the German development cooperation. “New Markets – New Opportunities: A Guide for German Companies” is supported by the Federal Ministry for Economic Cooperation and Development (BMZ). All issues are published on the websites of GTAI and GIZ. You can find selected issues, for example on Ethiopia also at

www.bmz.de/ez-scouts



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