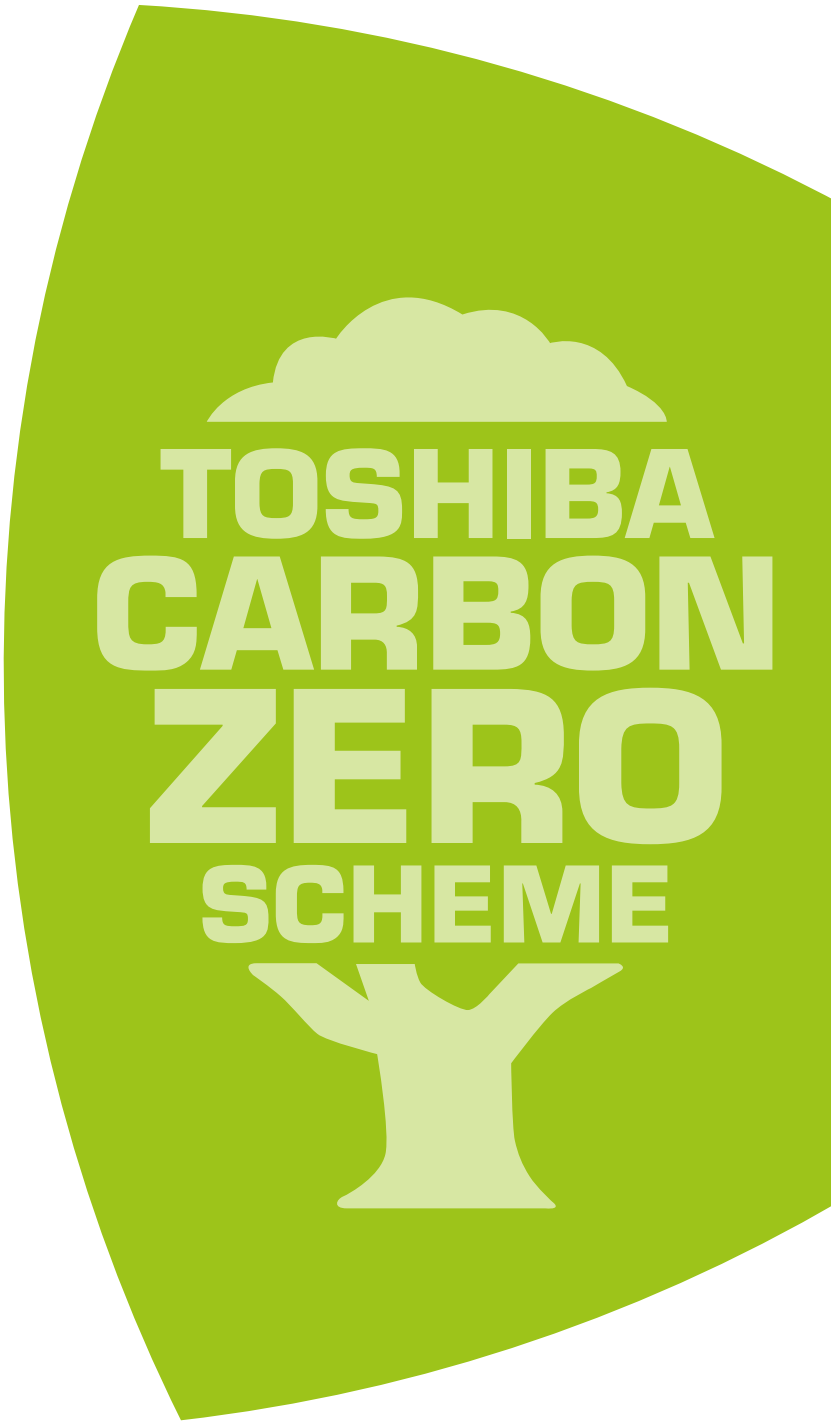
TOSHIBA

Impact Report 2009-2017

- This document provides an impact report on the carbon offset work of Toshiba Tec from June 2009 to December 2017
- The Toshiba Carbon Zero Scheme has been developed in coorporation with CO2balance



TOGETHER INFORMATION

BACKGROUND

Toshiba Tec have been running their Carbon Zero Scheme since 2009, calculating and offsetting the carbon dioxide emissions created from the manufacture, distribution and operation of its MFP products supplied to the European market – to achieve a carbon zero status.

Working with leading carbon management company CO2balance they have – from June 2009 to December 2017 - offset 544,812.43 tonnes of CO_2e. During this period several verified, high impact, carbon reduction projects in developing countries have been supported.

Milestones

During 2017 the scheme achieved the significant milestone of offsetting 500,000 tonnes of CO_2e, making Toshiba TEC one of the "major players" in the world of carbon offsetting, addressing and tackling their carbon emissions to reduce their impact on the climate.

Recognition

In addition to the prevention and reduction of carbon emissions the Toshiba Carbon Zero Scheme has contributed to many wider community and sustainable impacts, which closely align with the UN's Sustainable Development Goals (SDG). In 2017 the Scheme was recognised a UN "SDG Partner" and the Toshiba Carbon Zero Scheme is now listed on the United Nations global registry of organisations that actively support the implementation of their Sustainable Development Goals (see Appendix 1).

Carbon equivalents

To put the 544,812.43 tonnes of CO_2e into context, this volume has some surprising comparisons; it is the carbon equivalent to:

- 161,149 return flights from Düsseldorf to Tokyo
- Driving the circumference of the earth 71,080 times
- The annual emissions from 121,370 European homes
- Lighting 12,667,063 million energy saving light bulbs for a year
- It terms of size it equates to 303,024,674 m^3 of CO_2
- 13.67 million cups of coffee

This first section of this impact report explains the additional community and environmental benefits over and above simple carbon saving of the investment in the CO2balance Kenyan Energy Efficient Stove Project, which has received 189,170.65 t CO_2e (or 35%) of the total support to date. The funds are used to sponsor the distribution of stoves to poor households and the maintenance of those stoves for the first seven years.

Furthermore, a total of 103,558.91 tCO_2e has been offset through the Uganda Borehole Project, which rehabilitates broken boreholes to provide families with clean water, removing the necessity to boil the water to purify it.

In addition to these two projects in Africa, the Toshiba Carbon Zero scheme has supported the Brazilian Forestry project, which replaced the Indian Wind Power Project in 2016.

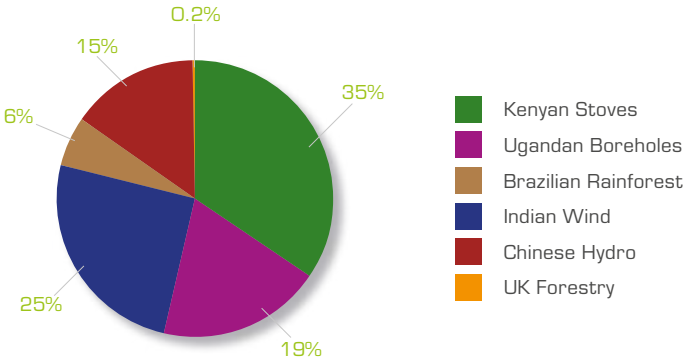
Besides the offsetting of MFPs, selected Operating Countries throughout Europe have also offset their BCS units to make them Carbon Zero, which have been included in the figures shown within this report.

SUMMARY

The tables below show a summary the total tonnes of CO_2e offset per project since the project began in 2009, along with the figures for the last reporting year of 2017:

June 2009 to December 2017

Project	Tonnes CO_2e Offset
Kenyan Stoves	189,170.65
Ugandan Boreholes	103,558.91
Brazilian Rainforest	30,884.86
Indian Wind	138,146.37
Chinese Hydro	81,949.69
UK Forestry	1,101.94
TOTAL	**544,812.43**



January 2017 to December 2017

Project	Tonnes CO_2e Offset
Kenyan Stoves	18,141.12
Ugandan Boreholes	18,009.73
Brazilian Rainforest	18,009.73
TOTAL	**54,160.58**

CARBON OFFSET PROJECTS

Kenya Energy Efficient Stove Project (since 06/2009)

The Kenyan Energy Efficient Stove Project builds energy saving cooking stoves for villages in Kenya. These brick stoves result in 50% reduction in the need for firewood and thereby prevent carbon from being emitted.

In addition to carbon prevention it also provides families with a cost and time effective method to cook with. The reduced need for firewood helps to prevent deforestation, creating knock on benefits to the wildlife in terms of habitat, biodiversity and flood prevention.

It is also a healthier method of cooking as it reduces in-door smoke by half. In-door smoke is a serious problem in Africa and the World Health Organisation dubbed it the “kitchen killer”, as it is responsible for nearly two million deaths in Africa every year.

Other co-benefits of the project include:

- Reduced deforestation and degradation of surrounding forests
- Reduced soil erosion, nutrient loss and risk of flooding
- Reduced cooking and wood collection time; householders can spend more time on other household tasks, as well as schooling and supervising children
- Reduced exposure of firewood collectors (mainly women) to hazards in remote areas
- Reduced burns and injuries from exposure to an open fire

Project Location

There are numerous project locations within the Kenyan Energy Efficient Stove Project run by CO2balance; the project locations for Toshiba’s offsetting work are the “Aberdares”, “Shimba Hills” and “Kisumu” projects”.

The project is located in and around Kisumu, which is Kenya’s third largest city and the principal city of western Kenya. This is an administrative district of Nyanza Province, Kenya. It is one of the poorest areas in Kenya characterized by high incidences of maternal and infant mortality, with most of its people suffering from unemployment, poor health and poverty.

The Aberdares Range is a 160 km long mountain range of upland, north of Kenya’s capital Nairobi and just south of the Equator with an average elevation of 3,500 meters.

It forms a section of the eastern rim of the Great Rift Valley. The lower slopes are lush fertile farmed, whilst higher areas are known for their wildlife. This rich habitat is home to numerous species of plants and animals including the rare Black Rhino.

The Shimba Hills is an area of coastal rainforest, woodland and grassland. It is an important area for plant biodiversity – over 50 % of the 159 rare plants in Kenya are found in the Shimba Hills, including some endangered species. It is also a nationally important site for birds and butterflies.

The communities that live there are amongst the poorest rural people in Kenya. Surviving on less than a dollar a day they rely on the dwindling forest resources to sustain daily life. This project eases their workload and protects vital natural resources from over exploitation.

Impacts

The offsetting commitment made by Toshiba TEC between 2009 and 2017 has resulted in numerous impacts to the local communities within the project areas of Kenya. The table below provides a summary of these impacts related to the Kenyan Energy Efficient Stove Project:

Impact Sector	Impact	Quantitative Data[1)]
Environment	**CO_2e prevented**	189,170.65 tonnes
	Wood saved	164,578 tonnes
	Area protected	472.93 hectares
Social	**Number of stoves built**	9,008
	Time saved	108,098 days
	Children impacted	18,016
	Adults impacted	6,992
	Old people impacted	9,008
	Total people impacted	34,016
Economic	**Working time saved**	864,780 hours p.a.
	Money saved per household	21 days wages p.a.

Health Impacts Condition	Quantitative Data[2)] Likely reduced cases from project support
Respiratory illness (Lower Chest /Lung)	11,981
Asthma	12,611
Serious Ear Nose and Throat irritation	9,459
Total reduced instances of serious illness attributable to indoor smoke	34,051

[1)] The data from the impacts are based on the field work carried out by CO2balance within the project locations in Kenya. The data that is gathered is in line with the requirements of the Gold Standards as part of the annual Monitoring Surveys. These Monitoring reports are available on the Gold Standard Registry. Data is then cross compared against national averages in Kenya to ensure accuracy. Assumptions and extrapolations have been used where relevant.

[2)] The Health Data is derived from the following sources R. Perez-Padilla et al, 2010. 'Respiratory health effects of indoor air pollution' in International Journal of Tuberculosis and Lung Disease, vol. 14 no. 9, pp 1079-1086 . Kenya National Bureau of Statistics. (2008). Kenya Integrated Household Budget Survey. Ministry of Planning and National Development, p. 1-300.

Ugandan Borehole Project (since 04/2013)

The project is based around the rehabilitation of boreholes in Northern Uganda, supplying families with fresh clean water. As well as the natural health benefits it means that families no longer have to boil the water, saving firewood and thereby preventing carbon emissions from being released.

Access to safe drinking water is a serious issue in Africa effecting the health and well being of local communities. A survey by the International Institute for Environment and Development (2009) revealed that there are an estimated 50,000 defective water supply installations (IIED 2009). In addition it was estimated that 40-50% of hand pumps in sub-Saharan Africa were not working (Diwi Consult & BIDR, 1994).

In addition to funding the borehole rehabilitation, the carbon credits that this project produces creates a funding mechanism to deliver a long term maintenance programme for the boreholes.

Project Location

CO2balance runs the borehole rehabilitation project in the Lango sub-region in the districts of Alebtong, Dokolo, Kole and Otuke. The districts have a combined population of just over 700,000.

In the last 30 years, these districts have been particularly vulnerable to violent conflicts originating in the neighbouring sub-regions of Karamoja and Acholi, which have severely impacted household food security. The twenty-year rebellion of the Lord's Resistance Army (LRA) began in the Acholi sub-region in 1987 but had an increasing impact on the neighbouring Lango areas.

The insurgency destroyed much of the water infrastructure, leaving hundreds of boreholes in disrepair and residents without access to safe water. The Acholi sub-region received huge support from donors following the war, but the Lango sub-region has been largely overlooked despite being heavily affected.

Over the past three decades sustained periods of conflict have led to the displacement of around 2 million people in Northern Uganda and the area now suffers from some of the highest poverty rates in Uganda with over 60% of the population living below the poverty line. This highlights that there is an urgent need for development assistance and aid initiatives in the region.

Impacts

The impacts to the community and wider environment as a result of Toshiba TEC's support for this borehole project in Uganda are as follows:

Impact Sector	Impact	Quantitative Data
Environment	**CO_2e prevented**	103,558.91 tonnes
	Wood saved[1)]	73,164.37 tonnes
Social[2)]	**Infants (< 5) impacted**	12,991
	Children impacted	20,077
	Adults impacted	25,982
	Total people impacted	59,051
Health[3)]	**Clean water supplied**[1)]	129,321,606 litres
	Likely cases of Diarrhoea avoided	1,010
	Likely fatalities avoided	81

[1)] Wood saved and clean water supplied - Calculations based on field measurements conducted by staff contracted to CO2balance and are conducted according to the requirements defined by the Gold Standard. Monitoring data is available on the Gold Standard registry.
[2)] People Impacts - Calculations based on field measurements conducted by staff contracted to CO2balance and survey data from the Uganda Bureau of Statistics.
[3)] Health Impacts - Calculations based on number of diarrhoea incidences per 1,000 people recorded in Northern Uganda reported by Barungi & Kasirye, 2011 and the reductions in diarrhoea and diarrhoea fatalities expected after installing a borehole reported by the World Health Organisation.

EXTERNAL PROJECT VERIFICATION

Projects in Kenya and Uganda

The Kenyan Energy Efficient Stove Project and Ugandan Borehole Project are externally accredited through the Gold Standard. An internationally respected standard that assesses the social and community benefits to the region in addition to carbon saving. The Gold Standard Foundation is a Swiss based, non-profit organization providing certification of premium quality carbon credits in both the voluntary and compliance markets.

The thorough and extensive methodology and approval process of the Gold Standard is designed to certify the highest quality energy efficient and renewable energy carbon reduction projects. All Gold Standard certified projects demonstrate real and permanent emissions and sustainable development for the local communities that are measured, reported and verified.

The Gold Standard quality benchmark is derived from the actions of the Kyoto Protocol and its methodology is currently endorsed by over 70 non-governmental environmental and development organizations worldwide.

Other projects

Brazilian Rainforest, Brazil (since 04/2016)

This project takes place under the verified carbon standard.

The project is located within the Amazon Rainforest of Brazil and is based around the protection of the forest through avoided deforestation and sustainable forestry management. The protection of the rainforest avoids the release of carbon emissions, with the trees acting as a natural sponge, absorbing carbon dioxide emissions as they grow. As well as carbon savings it supports the Amazon's rich biodiversity of plants and wildlife.

This region is part of the Brazilian Amazon and known as Deforestation Arch, due to the intense deforestation pressure. The deforestation pressure in the State of Mato Grosso became then mostly the result of illegal land-grabbing by invasion of private lands, using to such objective logging, slash-and-burning and cattle-ranching.

The Florestal Santa Maria aims to combat this through the sustainable forestry management of 71,714 ha. of native forest. The project has developed technical forestry schools targeting education of local youngsters as well as working with the neighbouring State Park to develop initiatives to create local forest fire brigades.

Impact Sector	Impact	Quantitative Data
Environment	**Carbon Reduction Forest & habitat protection**	30,884.86 tonnes
	Brazilian Rainforest Protected	25.91 hectares



Wind Farm Generation, India (since 06/2009 - 04/2016)

This project takes place under the verified carbon standard.

The selection of projects are classed “bundled projects”, in that it is based around the construction of numerous wind turbines in different areas of India, including the Tamil Nadu region where turbines are installed in different passes (Aralvaimozhi, Senkottah and Palghat passes), where wind speeds is constant.

The Project generates electricity using renewable energy based on wind power which is supplied to the state grid. It hence displaces the electricity which would have otherwise been generated from fossil fuel fired power plants connected to the grid.

Impact Sector	Impact	Quantitative Data
Environment	**Carbon reduction**	138,146.37 tonnes

Small Scale Hydro Generation, China (06/2009 -03/2013)

This project takes place under the verified carbon standard.

Hydro Power: The electricity generated by the hydropower units displaces the electricity on the country’s national Power Grid, which is primarily supplied with fossil fuel generated power ensuring that genuine greenhouse gas emissions reductions are made. Small scale projects typically consist of several 8MW hydro units; run-of-river projects are based around the diversion of water through a hydropower tunnel and then rejoining the river, reducing the need for a dam.

Impact Sector	Impact	Quantitative Data
Environment	**Carbon reduction**	81,949.69 tonnes

UK Forestry Project, Somercombe Wood (06/2009 - 09/2013)

Somercombe Wood is located in the Blackdown Hills Area of Outstanding Natural Beauty (AONB) on the Somerset/Devon border in the West of England. The trees that have been planted at the woodland will naturally absorb carbon as they grow, and are a mix of broad-leaf native trees, including English Oak, Ash, Silver Birch and Alder. The land is owned by CO2balance, to ensure complete control over the long term future of the trees.

Impact Sector	Impact	Quantitative Data
Environment	**Carbon reduction**	1,101.94 tonnes

CASE STUDIES

Feedback from people that live within the project areas in Uganda:

Molly Adong

40 year old Molly Adong, a resident of Baralegi village and a user of Baralego borehole, is lucky to stay close to a clean and reliable water source. She is married and has 5 children who look up to her for everything.

"*The rehabilitation of this borehole has increased settlement in our village since many people are now returning home after the rebel attacks in the early 2000s. With the increased population, I saw an opportunity to start up a shop dealing in silver fish and sweet potato chips with money received from the Water Resource Committee treasury. This is money that we collect for maintenance of the borehole and later receive as a loan from the treasury, which we get to pay back with an interest. The interest added builds on the money meant to help with borehole maintenance like fencing, sweeping, drainage clean up and soak pit digging.*"

Molly believes the time saved from water and firewood collection enables her travel to the big trading centres in search of stock for her shop. With the money she has made, she can now provide for her family and also save up with the women's saving group united by the presence of the borehole.

Mary Odong

"*My name is Mary Odong, I am 45 years old and I live in an extended household of 9 family members. I am a water user of Akwac A borehole in Otuke District and I live 50 meters away from the borehole. I am a member of the water resource committee in the position of secretary and also a group member in a women's group in the village of Akwac A. Apart from collecting water from this borehole, we have been able to form a women's group that performs in village celebrations and also encourages women to start income generating activities.*"

Mary narrates that since women are the key primary collectors of water, the borehole acts as a unifying factor for them and it is after the rehabilitation of this borehole in 2016 that they put more strength in the activities of the group. "*With so much time saved from water and wood collection, we decided as a group to come up with activities that not only strengthened our women's group but also enabled us to earn an extra income for our families. We started making crafts for sale like mats, bags, hats, etc., having competitions in music, dance and drama against neighbouring villages which earned us prizes and helped us form a women's saving group. The money earned as a group also enabled us purchase uniforms for the group which helped improve our image and easy identification in society*" added Mary.

APPENDIX 1

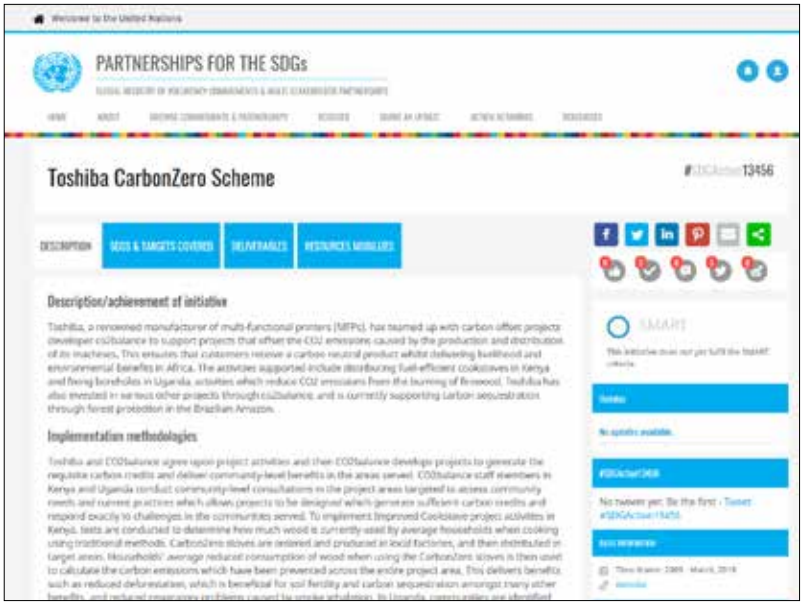
UN partnership for Sustainable Development

The UN Sustainable Development Goals

In 2016 the UN launched their Sustainable Development Goals, a set of 17 measurable Sustainable Development Goals (SDGs), ranging from ending world poverty to achieving gender equality and empowering women and girls by 2030. Through their Carbon Zero Scheme Toshiba TEC are supporting 13 of these 17 Goals. For details on each of the goals please visit https://sustainabledevelopment.un.org/

A recognised partnership

The impacts that the Toshiba Carbon Zero Scheme has achieved has been recognised under the UN's Partnerships for Sustainable Development Goals (SDG) programme, giving ratification that the Carbon Zero Scheme is helping to meet the UN's SDGs. The Toshiba Carbon Zero Scheme has a dedicated page on this Partnership platform.



https://sustainabledevelopment.un.org/partnership/?p=13456

Toshiba's contribution to the UN's Sustainable Development Goals

Case studies for the UN Sustainable Development Goals

The Toshiba Carbon Zero Scheme aligns closely with the UN's Sustainable Development Goals and during 2017 an awareness campaign was run that showcased the links to the Goals through case studies of communities within the projects areas of Kenya and Uganda. A total of twenty-four case studies was prepared:

- SDG 1: No poverty
  - Rachel Githendu
  - Vincent Ogwong
- SDG 2: Zero hunger
  - Mary Omer
  - Brenda Okello
- SDG 3: Good health
  - Christina Mashala
  - Monica Koli
- SDG 4: Quality education
  - Eliza Muriuki
  - Harriet Achieng
- SDG 5: Gender equality
  - Lillian Jepkemoi
  - Stella Adongo
- SDG 6: Clean water and sanitation
  - Patricia Okumu
  - Imat Adongo Keren
- SDG 8: Decent work and economic growth
  - Judith Okeyo
  - Alex Ongora
- SDG 10: Reduce inequality
  - Dennis Omer
  - Anna Akullu
- SDG 12: Responsible consumption
  - Caroline Odhiambo
  - Esther Ogume
- SDG 13: Climate action
  - Wangare Okello
  - William Otyang
- SDG 15: Life on land
  - Mary Anindo
  - Sylvia Olet
- SDG 17: Partnerships for the goals
  - Chief Beatrice Mavuta
  - Joel Okello - District Water Officer

To read and/or download these case studies, please visit:
https://www.toshibatec.eu/campaigns/un-sustainable-development-goals/

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About Toshiba Tec

Toshiba Tec Germany Imaging Systems GmbH is part of the globally operating Toshiba Tec Corporation, active in various high-tech industrial sectors.

Toshiba Tec Corporation is a leading provider of information technology, operating across multiple industries - ranging from retail, education and business services to hospitality and manufacturing. With headquarters in Japan and over 80 subsidiaries worldwide, Toshiba Tec Corporation helps organisations transform the way they create, record, share, manage and display information.

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About CO2balance

Established in 2003, CO2balance UK Ltd is a leading, UK based, carbon management provider offering carbon calculation, management and reduction services to leading blue chip companies including, BSkyB, Toshiba and Gaz De France.

As a project developer CO2balance UK Ltd creates African Gold Standard and CDM projects that focus on social, health and community benefits to the families within the project area, in addition to carbon savings. For more information about CO2balance please visit www.co2balance.com

co2balance.com

Together Information is Toshiba's vision for how people and organisations create, record, share, manage and display ideas and data.

It is based on our belief that the most successful organisations are those that communicate information in the most efficient way.

We make that possible through an integrated portfolio of industry-specific solutions, all of which reflect Toshiba's commitment to the future of the planet.