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Installing renewable energy systems  
to also benefit families through  
"Tower to Community".

**#ItBeginsWithUs**

**ENVIRONMENT**



# WHAT YOU'LL FIND IN THIS SECTION

## Environment

The acceleration of climate change has driven us to focus on balancing expansion of our services and network with our impact on our planet and society. In view of this, we continuously seek ways to reduce our operational footprint and emissions, as we aspire to pass on a healthy planet to our future generations.

Our digital services, from telecommunication connectivity through to the provision of digital ecosystems, are reliant on power. Currently, majority of our energy consumption, and thus greenhouse gas (GHG) emissions, are attributed to energy required for our network ecosystem.

Climate risks have the potential to impact not only the long-term sustainability of our business, but also the wellbeing of local communities. We view responsible climate action and environmental management as part of our duty in delivering our purpose of Advancing Asia and are committed to reducing the environmental impact of technological advancement to meet social and environmental needs and expectations.

The Group's climate action and environmental management is driven by our Sustainability Steering Committee, with each OpCo executing their own localised environmental agenda in line with local regulations, policies and systems. Collectively, our efforts across the Group aim to deliver responsible operations that reduce negative impacts on the environment for our Digital Telcos to operate on greener, more efficient and sustainable energy and systems.



### ▶ Climate Action

#### Key Highlights:

- Developing our Net-Zero Carbon Roadmap towards meeting GSMA Zero by 2050 commitment
- Progressively finding ways to improve energy efficiency, use more renewable energy and reduce carbon intensity
- Greater collaboration among OpCos and integration of climate considerations

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### ▶ Resource and Waste Management

#### Key Highlights:

- Adopting a holistic approach to environmental management including the responsible use and disposal of materials
- Strengthened e-waste management at OpCos with efforts including public outreach
- Increasing sustainability awareness and advocacy on employees' environmental responsibilities

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Environment



## Climate Action

Corporations play a key role in the mitigation of global warming and to keep global temperatures from rising by 1.5°C, through decisions they take to invest in researching and implementing new energy technologies and energy efficiency measures. At Axiata, we are committed to contributing to carbon reduction as we operate in a region particularly vulnerable to the impacts of climate change which can potentially affect the long-term sustainability of our business.

### APPROACH

Our carbon reduction strategy focuses on areas of operational control. Across the OpCos, we pursue a concerted effort supported by resources spanning multiple departments and specialities, from our technology to energy personnel, up to senior level management and support, as well as industry collaboration, partnership and climate reduction frameworks.

Additionally, we remain committed to the GSMA Zero by 2050 target which calls for GSMA members to commit to setting verifiable Science Based Targets (SBT) at 1.5°C, or a target that aligns and meets national commitments. The global telco industry has committed to this target, making the industry among the first major sectors to voluntarily set a target for emissions reduction.

### Axiata Net-Zero Carbon Roadmap

The focus on reducing our carbon footprint reflects our cognisance towards the need to reduce our emissions, which form the biggest contributor to our environmental impact due to the energy needed to power our network infrastructure and connectivity ecosystem.

In line with our aspirations in climate management, in 2020 we took considerable strides in starting the process to align our OpCos towards a single trajectory that benefit the positioning of not only one, but all OpCos towards industry-led climate action. A key component of our effort to strengthen the alignment includes the development of our Net-Zero Carbon Roadmap.

**During the year, we commenced a carbon inventory exercise, which will continue into 2021.** The exercise enhances previous efforts as we took further steps to audit, assess and capture the full impact of our operations and its value chains on the ways in which we use energy.

The carbon inventory will enable us to develop Group and OpCo targets, to be achieved in phases, to:



**reduce our energy intensity**



**improve our energy efficiency**



**make use of off-grid, renewable energy solutions** as viable, feasible ways to offer our customers network affordability and accessibility

This roadmap will allow us to map changes in technology and innovation, service delivery, regulatory and industry advancements to drive our operations towards greater sustainability.



**GSMA Zero by 2050**



SCIENCE BASED TARGETS  
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

**Science Based Targets Initiative (SBTi)**

Towards realising our aspiration towards net-zero carbon, we enhanced efforts towards a strategic approach to managing our carbon emissions.

- ▶ **Enhanced internal mechanisms, controls and reporting** of our carbon inventory
- ▶ **Ensuring internal readiness and sound data** to formulate the targets in reaching realistic carbon reduction goals

### OUTLOOK

As our network footprint expands to connect more people across Asia, we are committed to working with partners, vendors and peers across our industry to explore innovative measures to improve our emissions management. Our long-term goal consists of reducing overall emissions and demonstrating overall regional leadership in telco environmental stewardship.

Environment



# Climate Action

## Minimising Our Carbon Footprint

### edotco: Championing green tower infrastructure solutions

edotco is a provider of best-in-class tower infrastructure which has transitioned towards building environmentally-friendly telecommunication structures. edotco undertakes a lifecycle approach to assess how they build green infrastructure, improve energy efficiency and invest in renewable technologies. Electricity grid improvements in some of their market countries have also contributed to reduced fuel required for back-up diesel generators of edotco towers.



edotco is able to quantify the reduction of carbon from their carbon reduction strategy, tracking and monitoring these internally, with third-party verification for assurance since 2016. For the next four years, edotco has identified the following targets for activities to be undertaken towards carbon reduction:

Reduction in Carbon Footprint

54% 2018    58% 2020    **70% 2023**

Solar Sites

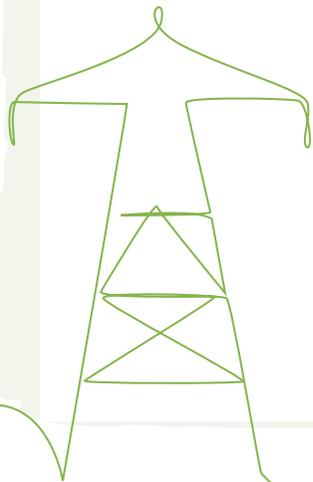
982 2018    1,677 2020    **5,500 2023**

**97% electrified** and **90% Lithium battery sites** by 2023

**50k trees planted,**  
**100 tonnes site waste reduced/reused,**  
**100% Green Office**  
by 2023

#### ▶ Building Green Telco Structures

edotco builds leaner and lighter structures by using building construction alternatives which reduce the amount of steel needed for the structures. It also invests in renewables and focuses on increasing efficiency so that collectively, edotco has recorded a **58% carbon reduction per site** from a 2013 baseline, with the goal of 63% carbon reduction per site by the end of 2021.



Design and construct 3-legged towers, which use **30% less steel**

↓ **25% reduction** in carbon emissions per site

Sleeker and innovative tower designs using less materials

↓ **30%-60% reduction**

**19 carbon fibre towers**

↓ **20%-39% reduction** in carbon emissions per site

**35 towers built using bamboo**

↓ **70% reduction** in carbon emissions per site

#### ▶ Switching to renewables

Where commercially viable, we use renewable energy to power our telco networks, with edotco's Bangladesh operation accounting for the majority of our renewable sites. We have also been able to continuously invest in and work with partners to test hybrid systems by leveraging advancements in renewable energy technology and cost efficiencies. edotco plans to achieve **3,000 renewable sites by the end of 2021**.

**1,677 solar-powered** sites

**1 on-site hydrogen generation** fuel cell site

**12 wind turbine** sites

**2 methanol fuel cell** sites



## Environment



## Climate Action

## Increasing Renewable Energy Operations at Our OpCos

Our Digital Telcos champion the use of more renewable energy for their operations in each of their markets. This is in line with our support for the energy industry's transition towards a greener grid, with our Group identifying ways in which our OpCo markets can utilise the evolving energy landscape to incorporate a higher proportion of renewables into their energy consumption.

All of our OpCos already incorporate renewable energy in their operations in some way and continue to assess opportunities to grow the proportion of renewable energy solutions every year, in collaboration with industry bodies, regulators and players along the telco value chain.

Increasing renewable energy generation for Robi will allow for **more continuous supply** to its towers, reducing reliance on the grid therefore allowing the grid to have strengthened reliability to users who may experience power disruptions. It also enables Robi to transition to a **higher proportion of a cleaner, renewable energy mix** across its operations and reduce its carbon footprint.



- ▶ Robi has grown the proportion of solar powered sites with **4.3MW capacity panels**
- ▶ In 2021 **Robi will increase the number of its solar base stations from 1,200 to 1,485**

Further to the deployment of solar base stations across Robi's operations, it has also proactively engaged with the relevant local energy authorities and telco industry bodies on ways in which telco towers in Bangladesh can **collectively deploy large 5-10MW solar plants** as a more efficient option for solar energy for its towers, increasing the proportion of renewables in the industry and community as a whole.

Cambodia has witnessed growth in the availability of solar technologies, with solar showing higher conversion efficiency and lower cost of operation and maintenance now compared with five years ago.



Against this backdrop, **Smart expanded on its solarisation plans in 2020**. During the year, its efforts focused on integrating solar to existing grid and diesel sites, **transforming them into solar-grid and solar-diesel sites**.

- ▶ Installed **110 sites for solar-grid and 100 sites for solar-diesel**
- ▶ This reduced energy consumption of grid by about 386MWh, **representing an 8% reduction in grid usage**
- ▶ Also resulted in lower fuel consumption for diesel sites, equivalent to a **17% reduction in CO<sub>2</sub>** from the average generator use

The solarisation programme not only resulted in a decrease in energy and fuel expenses, but demonstrated the growing feasibility and opportunities of renewable energy in reducing telco carbon footprint effectively.

Dialog delivered significant energy savings during the year, mainly due to the procurement and integration of highly efficient transmission systems and hardware, as the core network strategy moves to devices that consume less energy per unit bandwidth.



The **expansion of solar power production systems** across its networks and facilities are part of a long-term plan by Dialog to gradually move towards an eco-system of **tower sites powered primarily by solar power** including:

- ▶ Solarisation of generator huts
- ▶ Implementation of CDC cyclic setups at full-time generator off-grid sites toward optimising the efficiency of Lithium-ion batteries
- ▶ High-capacity net metering introduced at sites with large rooftops

As a result of these efforts to increase solar implementation, improve efficiency, and proactive intervention to increase efficiencies across the network ecosystem, Dialog yielded GHG savings of approximately **2,261.45 tCO<sub>2</sub>e** over the course of 2020, with cost savings amounting to over approximately SLR120 million across all areas of operation.



Environment

# Climate Action

## Harnessing Energy Efficiency Opportunities across Group

In addition to finding ways to add renewable energy to our energy mix, the Group continues to practice energy efficiency towards reducing our emissions. To this end, energy consumption is included as an indicator of our operational excellence, with each OpCo having determined reduction targets and the performance of senior management tied to environmental KPIs.

Our efforts to maximise energy efficiency include activities undertaken by edotco as follows:



- ▶ **58%** of edotco sites are monitored by ECHO, a centralised monitoring system which ensures energy efficiency of passive infrastructure
- ▶ Progressive transition from diesel sites to grid-powered sites
- ▶ **41% reduction** in carbon emissions per site
- ▶ Energy efficiency as part of **sourcing criteria**
- ▶ Installing **natural air cooling and outdoor cabins**

Dialog continued to use cutting-edge IOT-based technology:



- ▶ More effectively **monitor energy performance**
- ▶ Accurately measure **live monitoring**, for quicker turnaround
- ▶ Moving forward, **plans to expand these technologies** to a larger share of office locations and tower sites

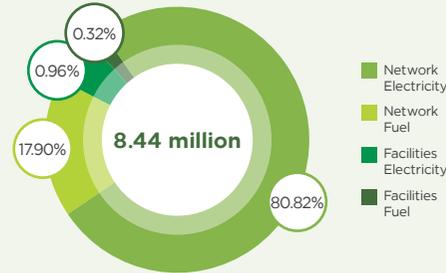
XL energy efficiency opportunities explored, implemented and integrated:



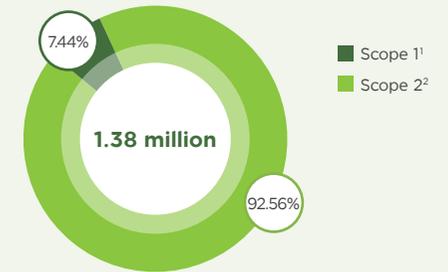
- ▶ Installation of Intelligent Ventilation Cooling System (IVS), DC fans and air conditioning
- ▶ A cooling system in the BTS, **reducing air conditioning by 30%**
- ▶ The BTS Single RAN, which combines several types of BTS into one, to **reduce energy consumption by 60%**
- ▶ Network modernisation with the latest technological devices to support Green BTS, capable of **providing 50% savings in energy usage**

## Monitoring Energy Consumption and Carbon Intensity

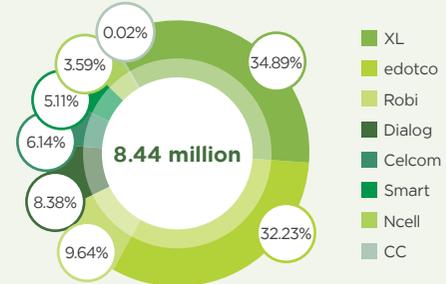
Total Energy by Source (GJ)



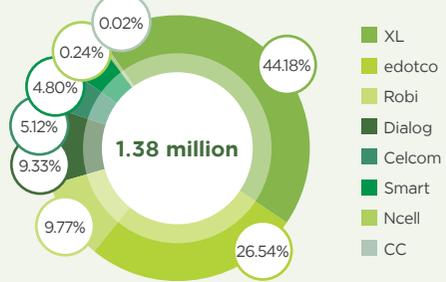
Total Emissions (tCO<sub>2</sub>e)



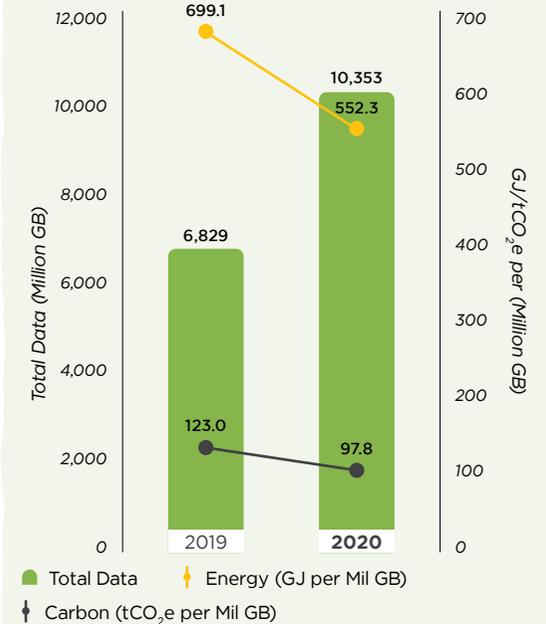
Total Energy by OpCo (GJ)



Total Emissions by OpCo (tCO<sub>2</sub>e)



Energy and Carbon Intensity (Digital Telcos Only)



Notes: <sup>1</sup> Scope 1: Direct GHG emissions from sources that are owned or controlled by the Group  
<sup>2</sup> Scope 2: Indirect GHG emissions resulting from the generation of electricity, heating and cooling or steam purchased by the Group  
 \* Axiata's current figures for direct energy consumption (GJ), and scope 1 emissions (tCO<sub>2</sub>e) use a standard emission factor for diesel (10.58kWh/l) which does not consider the efficiency of diesel generators  
 \* We are currently undergoing an exercise to enhance our collection, analysis and assurance processes of our energy and emissions data, and this will continue throughout 2021, as we enhance the reporting accuracy of carbon data towards a strengthened Net-Zero Carbon Roadmap

## Environment



## Resource And Waste Management

As our business continues to grow, we have become more conscious of our resource consumption and the need to address it with increasing urgency. We have started to adopt a holistic approach to environmental management as we not only consider our actions to reduce our carbon footprint through energy consumption reduction, but also include efforts to procure, use and dispose of materials responsibly. These efforts are executed across our network and at corporate level.

### APPROACH

Each of our OpCos implement various measures and systems to the management of waste and resources according to national and international regulations and standards. In 2020, Dialog worked towards receiving the ISO 14001 Environmental Management System (EMS) certification across its operations. The certification marks a step towards mitigating its potential adverse environmental impacts, including managing its consumption, emissions and waste disposal through revamped policies and processes, guided by the precautionary principle.

Generally, across our OpCos, the management of resource consumption and waste is divided between network equipment or non-network IT equipment, in which an e-waste agency or vendor is usually appointed for its disposal, adhering to formalised SOPs and procedures for handling waste between the waste generation site to the method and site of waste disposal.

### OUTLOOK

As waste increasingly becomes an area in which the industry, including telcos and wider digital ecosystem participants, seeks to manage, we recognise that partnerships with specialised waste disposal authorities, as well as working with our wider stakeholders (customers, suppliers and regulators) will lead to a more concerted and effective approach.



### e-Waste Management

During the year, our OpCos strengthened e-waste management efforts.

The **edotco Green Framework** provides guidelines on site waste management initiatives, including outlining types of e-waste, such as batteries and rectifiers, and other waste such as paper and plastic to be collected for **recycling, recovery, refurbishment and reuse** to minimise landfill waste and reduce its environmental impact. Waste management is also undertaken responsibly in adherence with the OHS Environmental Management certification, with site waste management initiatives tracked as part of each of its operating country's Green Scorecard.



e-waste collection bins are stationed at our Malaysian offices in collaboration with the Malaysian Communications and Multimedia Commission (MCMC)'s Mobile e-Waste Collection programme. e-waste collected from offices is subsequently sent for material recovery.

Dialog's waste management programme, launched in 2008 endorsed by the Central Environmental Authority of Sri Lanka, was formed with the objective of **recycling all forms of mobile waste generated by customers** around the country. The programme includes spreading awareness and educating the public on the improper disposal of mobile waste and the ways in which these impacts can be alleviated by responsible e-waste disposal and recycling. The programme **recycles the customers' old phones and accessories**, through **collection boxes stationed at all Dialog arcades and certain franchise outlets**, creating an attitude shift among mobile phone users to become more cognisant of the impact of improperly disposed mobile-related devices on the environment and on public health.

In 2020, Dialog **expanded the remit of the service to collect a wider variety of e-waste**, given the increase in public awareness surrounding the topic, and the severity of environmental degradation due to improper e-waste disposal. The initiative, now known as "e-Kunu" – a play on the Sinhalese word for "garbage" or "waste", is at the forefront of Dialog's revamped company-wide waste management effort.

Environment



# Resource And Waste Management

## Driving Environmental Awareness and Mindfulness within Our Organisation

Towards internalising climate action at our workplace, we conduct awareness programmes and engagements with our employees. In 2020, these activities included:

### Axiata Corporate Centre's drive for sustainability culture in the workplace

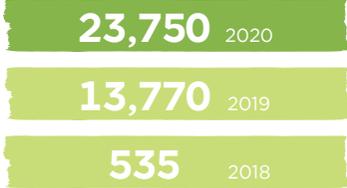


- Increased sustainability awareness and advocacy on employees' environmental responsibilities for the organisation and society as a whole, through **more consistent forms of communications** to employees on Axiata's sustainability agenda and current sustainability-related information. This included **promoting the internalisation of values of our Net-Zero Carbon Roadmap**, in which our employees have a significant role to play
- Setting up **physical spaces in our offices as green spaces** which symbolise our sustainability agenda while also representing a space for knowledge and information sharing. The space also functions as a place that encourages our employees to resonate with the meaning of sustainability and applying it to their lives in and out of the workplace

### edotco tree planting



- In addition to its green tower infrastructure, **edotco has undertaken tree planting across its footprint** since 2018 as the second pillar of its sustainability efforts. The initiative, which supports our carbon neutral ambition, is undertaken via our Employee Voluntary Engagement activities
- As of 31 December 2020, edotco has planted more than **38,000 trees**



### Smart's transition towards eliminating single-use plastic waste



- In the transition towards executing a single-use plastic reduction strategy and campaign, at the end of 2020 Smart appointed an external consultant to **assess the current consumption of single-use plastic within the company** and the attitude of staff towards single-use plastic
- This study, which will be completed in the second quarter of 2021, is expected to provide informed recommendations on the next strategic step for the **implementation of its strategy on single-use plastic reduction**

### Ncell Green Belt Initiative



- Ncell have taken up the responsibility for **building and maintaining the greening of Koteswori-Kalanki Ring Road stretch** in collaboration with the Department of Forest and Soil Conservation (DoFSC)
- The project will cover approximately **10.2 kilometers** in which Ncell aims to transform this segment into an exemplary green belt area, supporting the **plantation and maintenance of more than 6,000 trees** along this stretch for five years

