# Information Technology Challenge: Reducing the GHG Footprint

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# OUR OBJECTIVE

As IT professionals we are commitment to reducing the Carbon Footprint (CF) by eliminating Green House Gas (GHG) emissions in the scope of Information Technology services.

As a starting point, we need creative out-of-the-box solutions to identify, extract and analyze CF and GHG related data right from individuals using computing device to the working of larger installations such as Data Centers.

Subsequently we intend to implement processes and technologies to achieve net zero GHG emissions for the environmental benefit of our Planet and the livelihood and economic benefits of its citizens.

In the past several macro measures have been implemented globally to address environmental degradation and climate change, including policy reforms, economic incentives and regulations. Despite their enormous potential, actions required at the level of individuals have received limited attention.

01

INTRODUCTION

02

THE CHALLENGE

03

DESIRED SOLUTION

04

ADDITIONAL INFO

# 01

# Introduction

How We Got Here

# Introduction; How We Got Here


- There has been an unprecedented growth in wealth over the last 2 decades
- Global prosperity has been greatly supported by increasing availability of digital access
- Majority of the population is now connected through devices; the world truly has become a village
- Technological advances have made devices readily available and affordable,  with increased portability and speed
- There has been and will continue in the near future an exponential growth in the digital economy and social media, and the emergence of a disposable culture
- A change in work culture, further defined by the Pandemic, has fostered remote connectivity and hence device proliferation
- Digitization of global economies has led to the need for increased data centers capacity
- Data is the new GOLD, of great value once mined for its insights but requires copious amounts of energy to be stored, retrieved and analyzed
- Superior computing power (and hence energy consumption) is required to enable next generation data analysis, machine learning and AI technologies


# Introduction; Size of the Problem

- Average devices per household globally:
  - 2018 (pre pandemic): 2.4 devices
  - 2022 (post settled pandemic): 3.6 devices
- During the pandemic global average device per household has increased by at least 50% with EU and US leading the way
- On an average every year from 2013 onwards 300 million laptops have been shipped globally
- Tablets shipped in the year 2022 alone stands at 162 million units
- IT devices are estimated to consume 10% of global electricity production
- Projected e-waste 2019 – 2030 will be 65 million metric tons on average per year
- 80% of e-waste is not documented or collected for recycling
- Annual spend on cloud IT Infrastructure 2022: $90 Billion
- Global Data centers: 6,334 (hyperscale datacenters: 700)
- 2/3$^{rd}$ – 68% of Data center servers are retired every 3 year

# 02

# Challenge Statement

Definition and Components of the Challenge

# UNDERSTANDING THE CHALLENGE:

## Phase 1: End User Devices

Measure the Carbon Footprint for all types of electronic devices used by end users

## Future Phase 2: Data Centers (not in scope)

Measure the Carbon Footprint for an organization's data center(s)

## Future Phase 3: Next Gen (not in scope)

Organizational Carbon Footprint for next generation technologies

# Phase 1: End User Devices; The Challenge

We are seeking new age transformational methods and technologies to monitor and measure the GHG impact of various types of computing  devices (assets) including but not limited to PC's, Laptops, Tablets, Printers, routers, Smartphones used by typical employees or end users on behalf of an organization

- Identify the Assets for which CF has to be measured
- Capture the Asset details (sample provided under the Documents tab of the Challenge page)
- How do we measure the GHG and CF for the assets
- Parse the data to achieve the CF measurement
- In short, how do we arrive at the CF for a standard end user working in the office or at a home office setup

# Look out for our upcoming Challenges!

## Phase 2: Data Centers

- Measuring CF for Data Centers as they increase in size and computing power

## Phase 3: Next Gen

- Climate impact of Technologies like Quantum, AI, Blockchain etc.

# 03

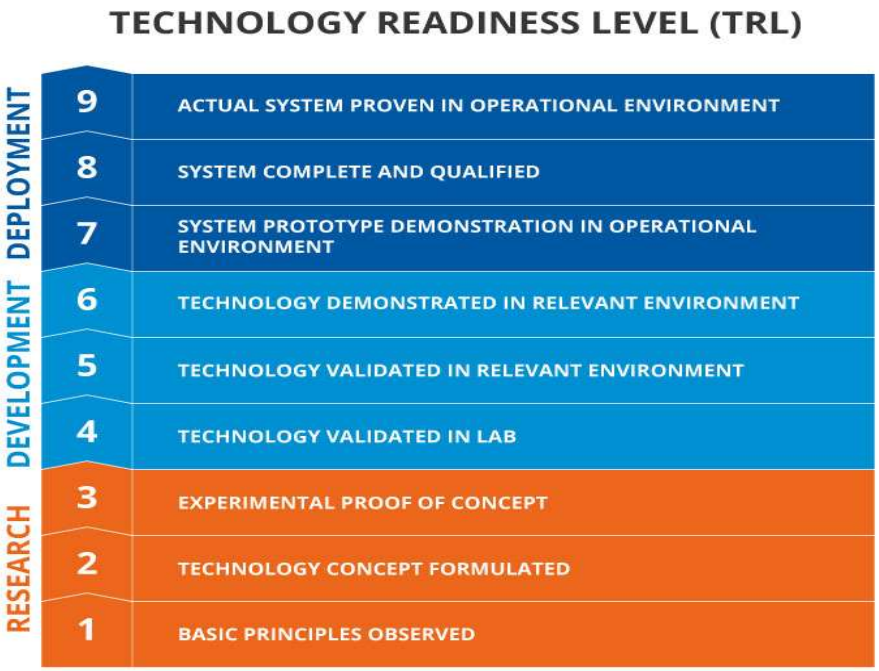
## SOLUTION PARAMETERS

# Solution Parameters

- The End User challenge aims at creating innovative solutions to the existing problems in the IT sector
- The solution target should be defined based on North America (USA and Canada) geographical area
- Please make and state any reasonable assumptions used for arriving at the solution
- The desired solution should address all of the below elements:
  - Collection of the necessary Asset details (sample provided under the Documents tab of the Challenge page)
  - Recommendations on the Storage Platform for the captured data and analytics
  - Measure and Evaluate the data for each asset:
    - Define all units of measurement used in the reporting
    - Define the Method used to calculate the GHG footprint
    - Account for the device usage footprint
    - Also account for the footprint for logistics; asset manufacture to asset delivery
  - Provide the reporting mechanism for the above data and analytics
  - End of life asset disposal footprint and documentation

# Solution Parameters

We are seeking solutions that are at a MINIMUM Technology Readiness Level (TRL) of 4 as per the grid provided below:




Specific requirements for this Challenge include:

- Technology must be validated in at least a lab/test environment
- Cloud-based technology which can be accessed via internet or mobile app. is preferred
- Any intellectual property & technology must be in public domain, owned by the submitter or the submitter should be sufficiently licensed to use the same

# 04

## Additional Information

Rewards & Challenge Rules

# Rewards

**C$ 5,000**

TOP AWARD

**C$ 2,500**

SECOND PLACE

# Challenge Rules

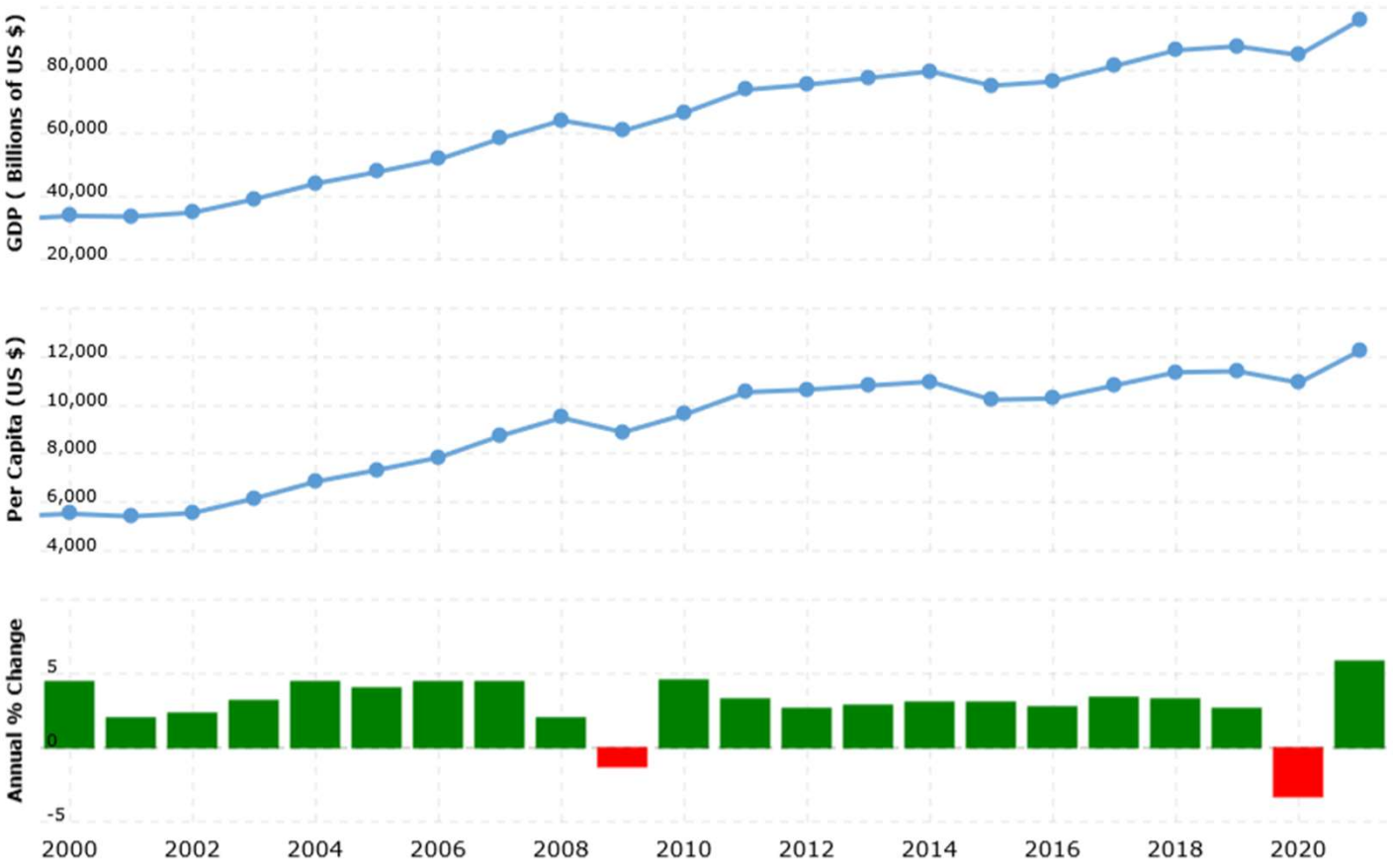
**Challenge Rules & Regulations** are provided under the Documents Tab on the Challenge page

# Appendix

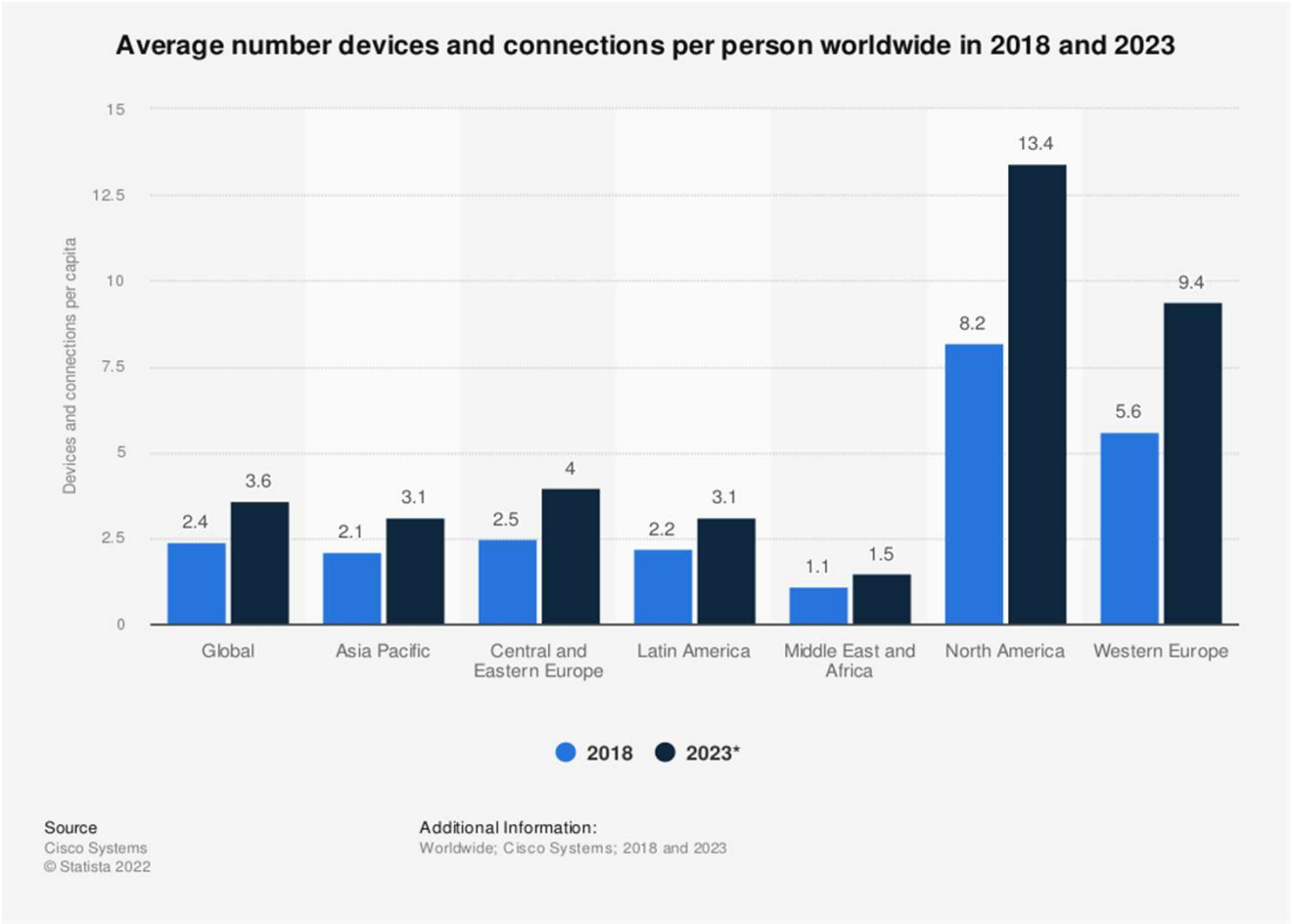
# Appendix 1:

Sample for Asset Data Collection is provided under the Documents tab of the Challenge page

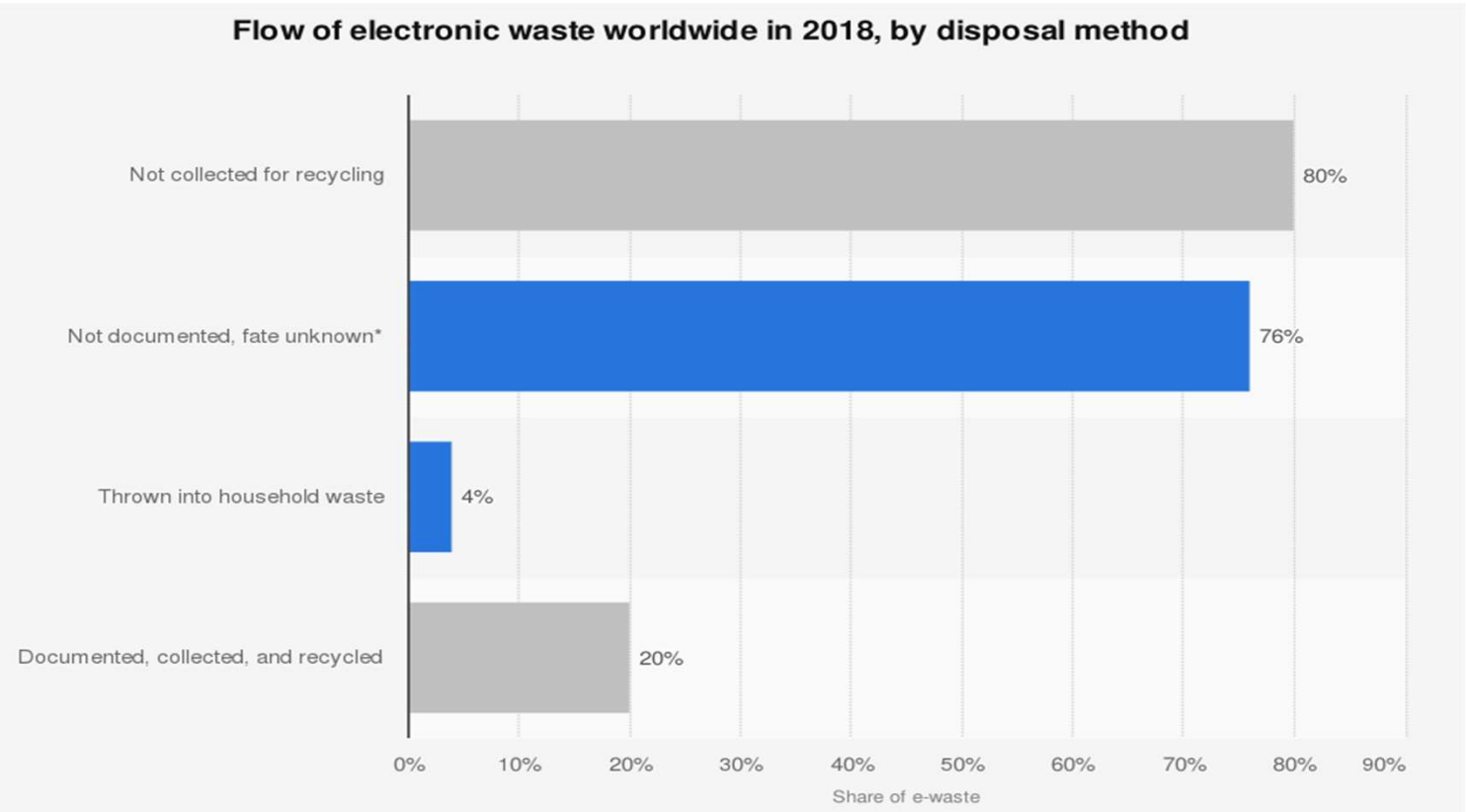
# 2: Global Growth of Wealth: 2000 - 2020



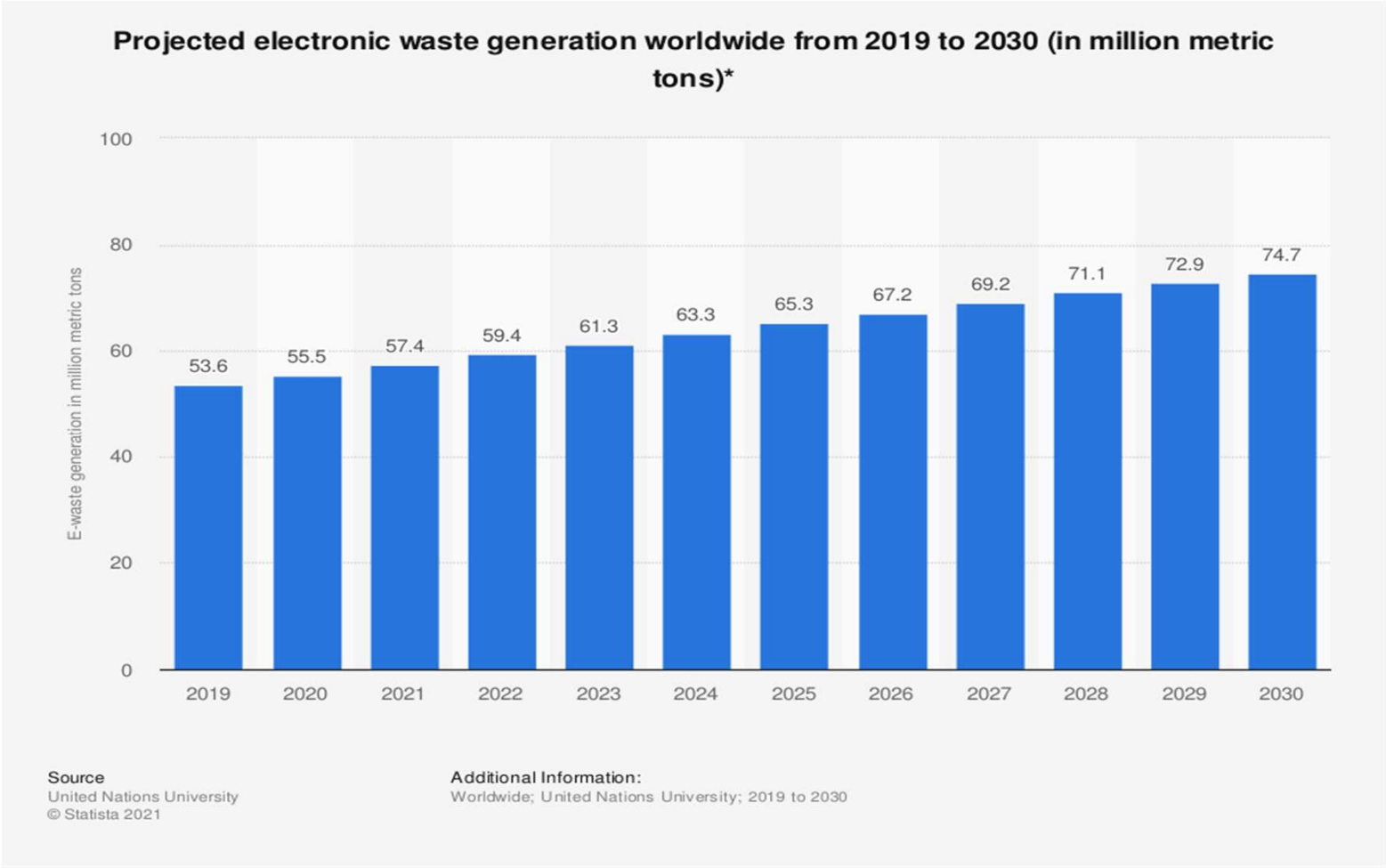
# 3: Average Devices and Connection per capita: 2018 - 2023



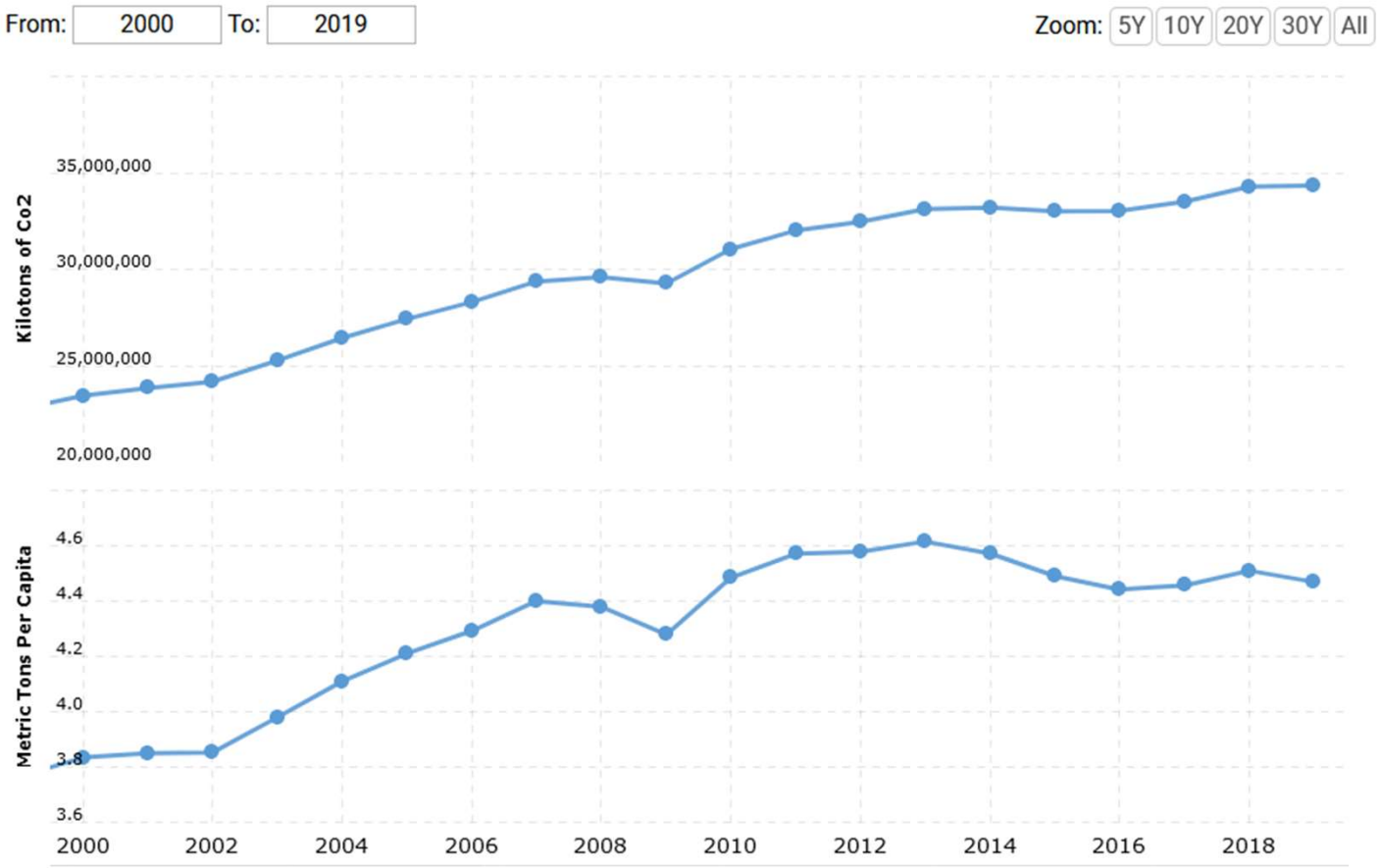
# 4: Percentage of E-Waste Recycled and Landfilled: 2018



# 5: Projected E-Waste Generation: 2019 - 2030



# 6: CO2 generation and release: 2000 - 2019



# Looking forward to receiving your Solution