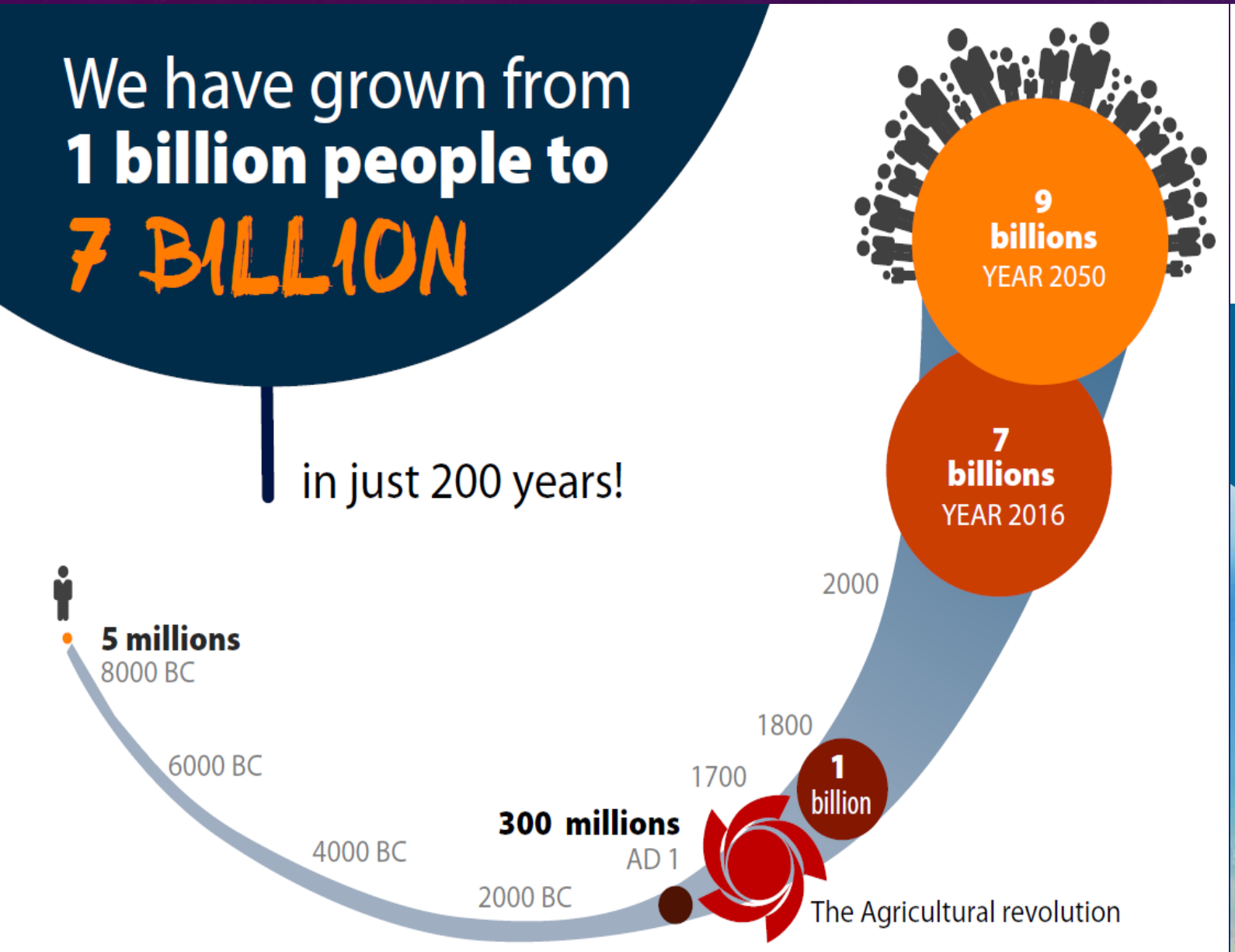
Megatrend - Climate Change, Resource Scarcity and Sustainability

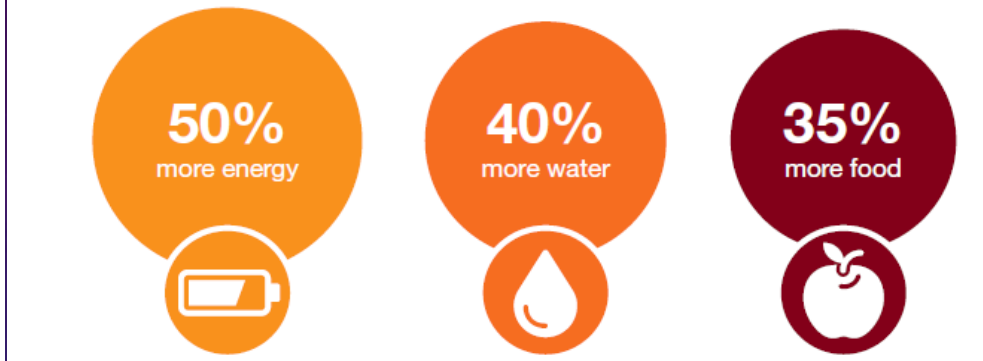
- What it is?
- Why Important?
- Global Trends
- Challenges
- Developments from Indian Perspective
- How it affects Businesses, Lives, Society etc.?
- Circular Economy
- Case Studies
- What are the opportunities?

References:

1. PWC Megatrends
2. Trend Compendium — Roland Berger
3. HP Megatrends 2020
4. “Do Better With Less” By Navi Rajdou and Jaideep Prabhu

Increased Consumption and Industrialization are Key Factors Driving Climate Change





Climate Change: *Causes*

Greenhouse gases (GHGs) are vapors in the atmosphere, like carbon dioxide, that trap heat around the earth. When we use fossil fuels like coal, natural gas, and oil to power our homes, businesses, and vehicles, we release even more GHGs into the atmosphere.

Humans have released a significant amount of GHGs since the mid-1800s, and this has led to rising temperatures and other changes in our earth and climate.

Sources of Emissions

- Electricity
- Transportation
- Industrial
- Buildings
- Waste
- Agriculture

Key Issues in the News

“We need an optimistic conversation about climate change – with hope, not fear.”

How climate change can fuel wars

Droughts are already making conflict more likely. As the world gets hotter, mayhem could spread

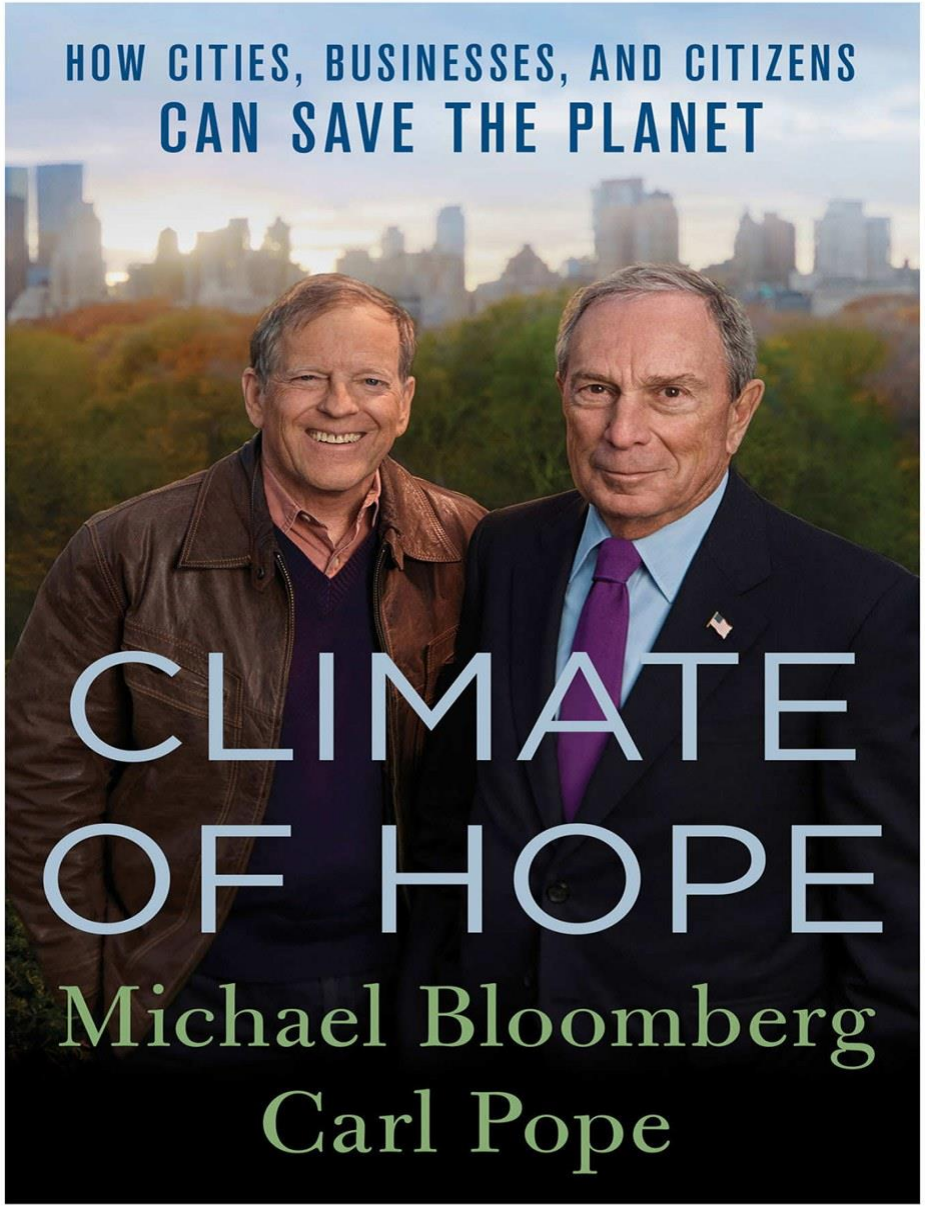
The world is losing the war against climate change

Rising energy demand means use of fossil fuels is heading in the wrong direction

Oil majors face shareholder resolutions on climate change

Environmentally friendly investors have notched a number of victories, but they are showing their limits

We’re Killing the World’s Plants Faster Than We Thought



UN’s Sustainable Development Goals

The blueprint to achieve a better and more sustainable future for all

Why This Issue So Important?

Expected increase in global food demand by 2030[1]

of all water in the world is fresh water, and three quarters of this is locked in glaciers[2]

of supply left in proven oil reserves assuming that current levels of demand continue[3]

Average temperatures are predicted to increase by over

2°C

in the 21st century[4]

annual reduction in carbon intensity is required to meet the 2°C target (well above historic norms)[5]

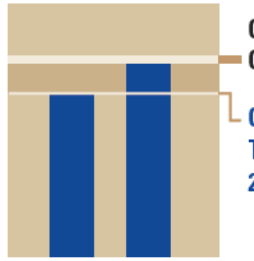
of worldwide energy consumption could be saved through energy efficiency measures[6]

There is almost ***3 times*** as much carbon in the known coal, oil and gas reserves than in the carbon budget to limit temperature rises to 2°C by 2100[7]

The global population is predicted to demand 50% more energy by 2030[8]

It takes 7 units of fossil fuel energy to produce one unit

Emission levels are too high – already 14% higher than the estimated emission levels required to meet the 2020 goal.[104]

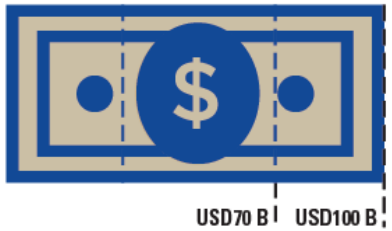


By 2050, costs of extreme weather could reach up to 1% of world GDP per annum.[105]

For example, this would equal **USD720 BILLION,** based on the 2012 value of world GDP.

Adapting to a 2°C warmer world by 2050 will require investments of

USD70-USD100 BILLION PER YEAR.[106]



With a warming of 2-3°C:

The Amazon rainforest could dry up.

Irreversible melting of the Greenland ice sheet could occur.

20-50% of species would be at risk of extinction.[107]

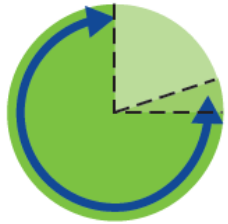
With a warming of 3-4°C, up to

200 MILLION PEOPLE

could become permanently displaced due to rising sea levels, flooding and droughts.[108]

= 50 million

THE DEVELOPING WORLD WILL SHOULDER



75-80%

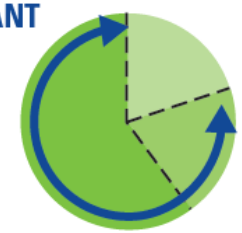
of adaptation costs, with East Asia and Pacific regions carrying the highest costs.[109]

LOCAL MITIGATION EFFORTS ARE INCREASINGLY IMPORTANT

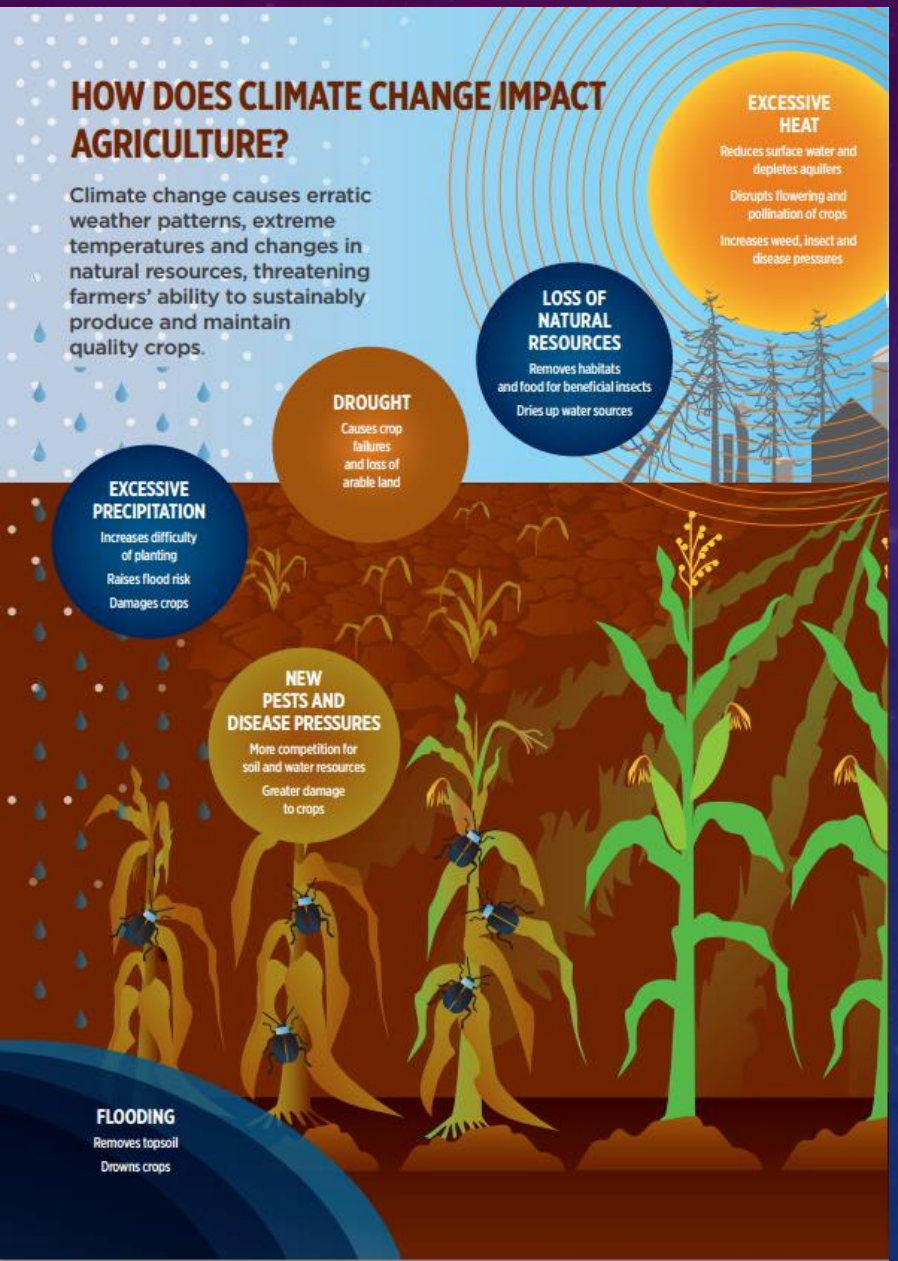
Cities account for

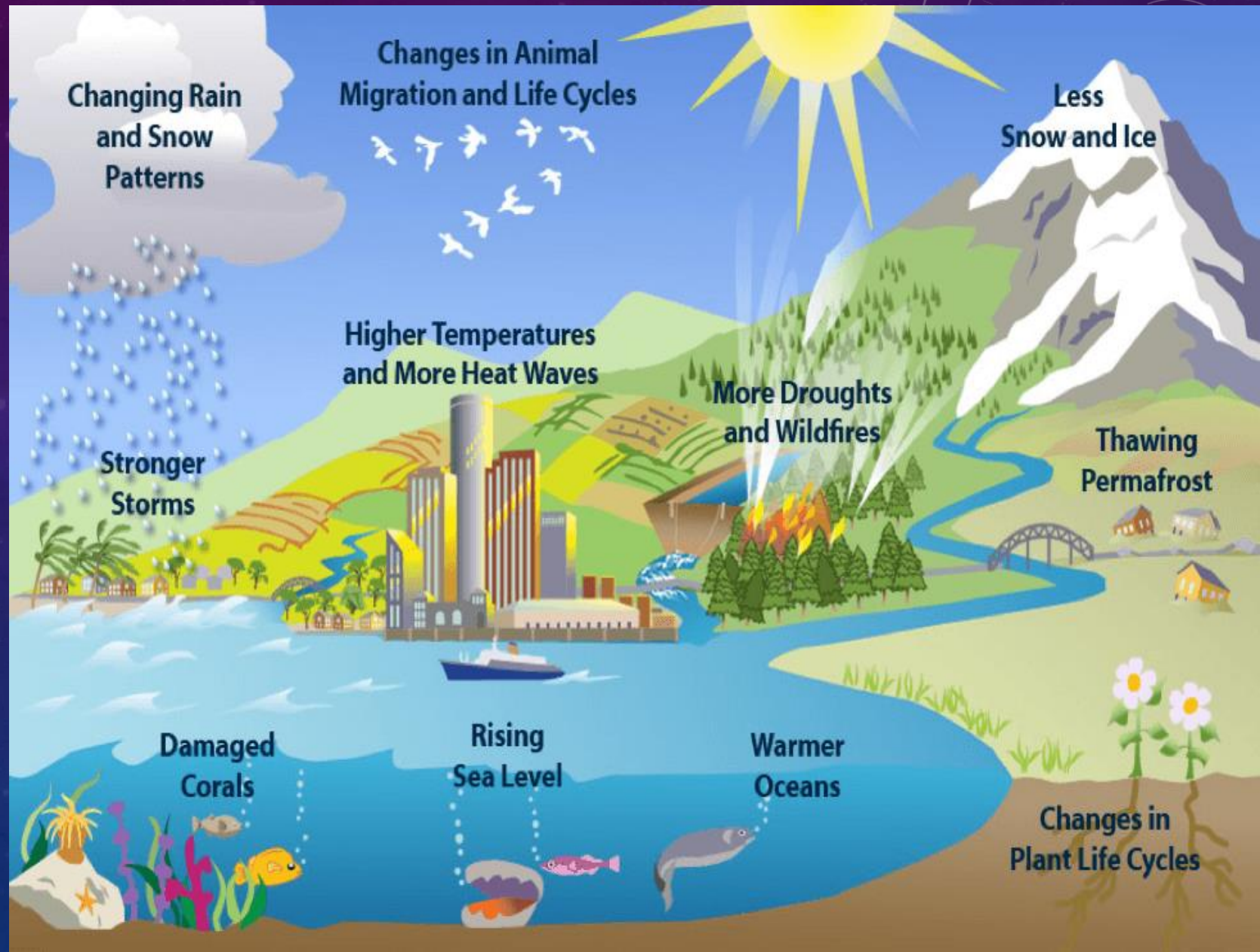
60-80%

of energy consumption and are responsible for the same portion

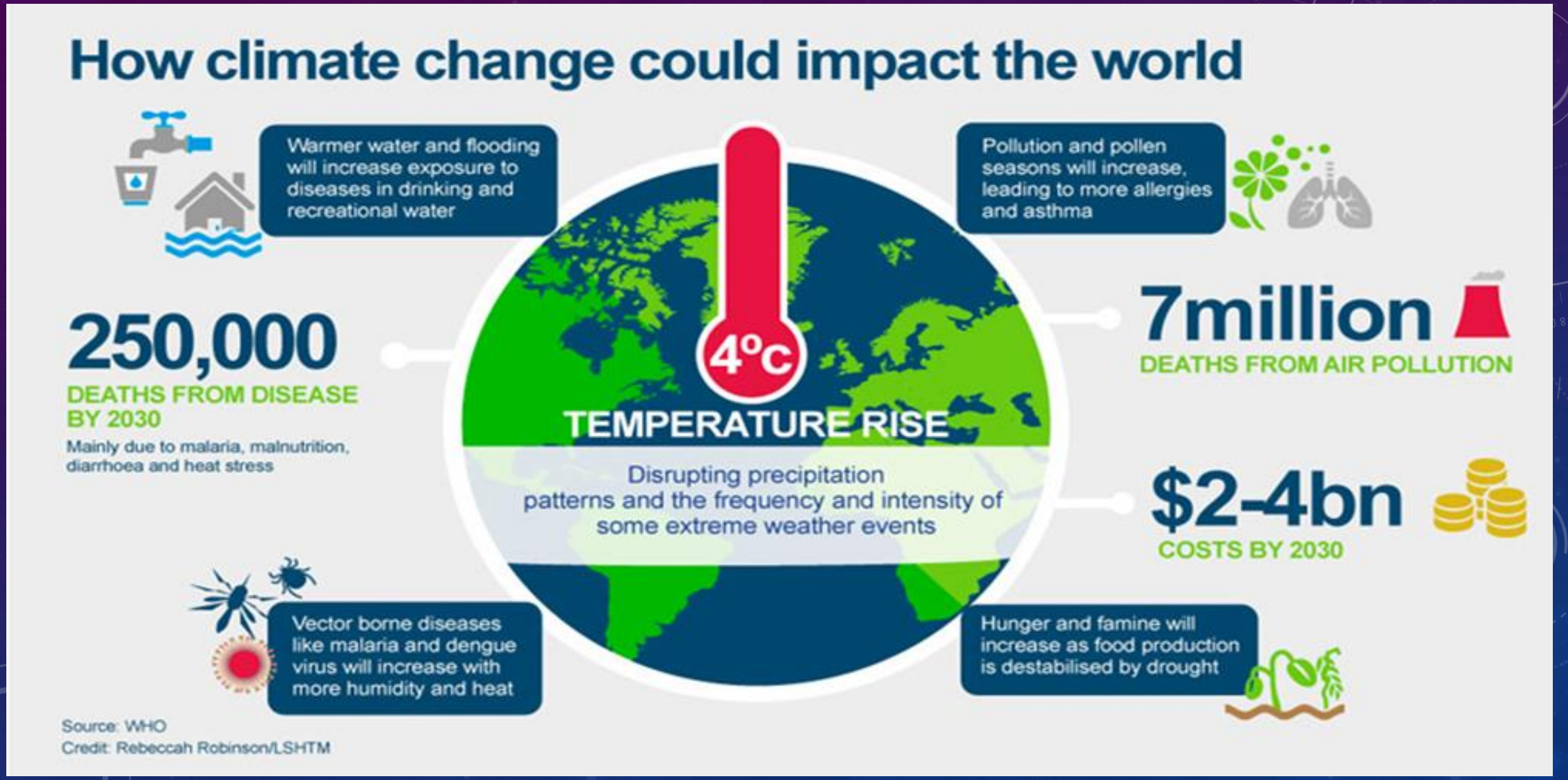


Climate Change and its Impact





Climate Change and its Impact……Continued



Climate Change and its Impact……Continued

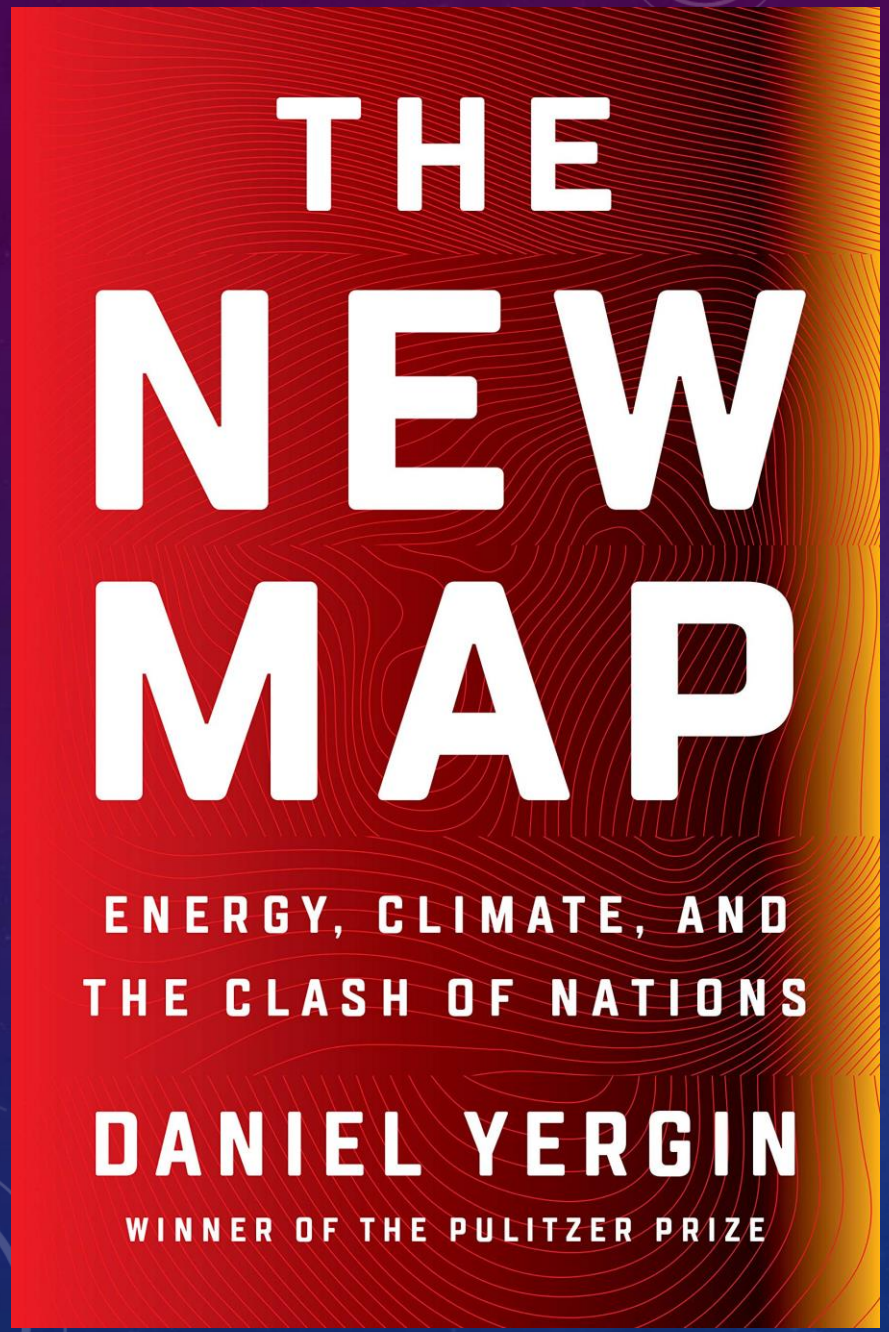
Ram Nidumolu, C.K. Prahalad, and M.R. Rangaswami, September 2009 Issue

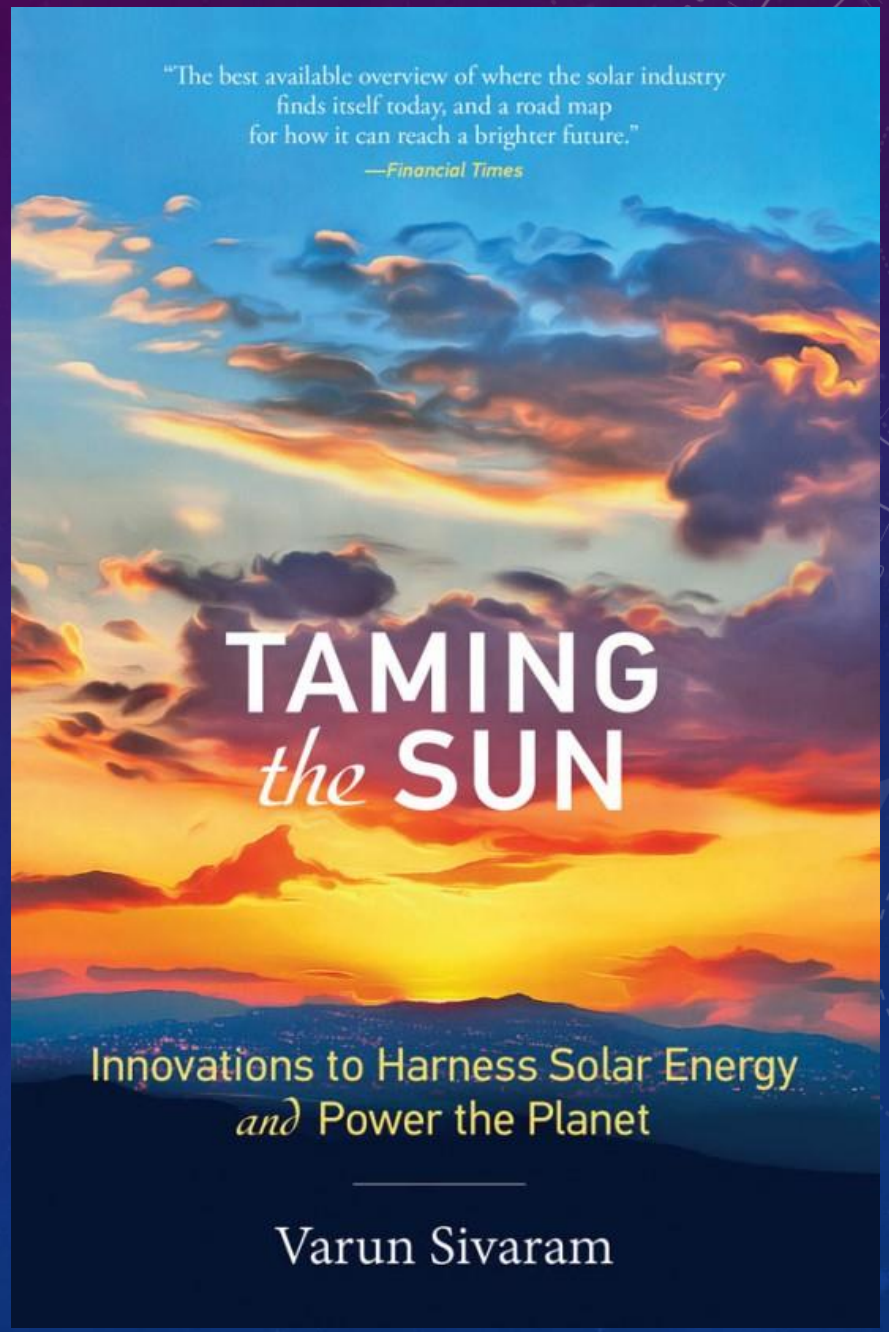
Harvard Business Review
www.hbr.org

Why Sustainability Is Now the Key Driver of Innovation

The Idea in Brief

- Sustainability isn't the burden on bottom lines that many executives believe it to be. In fact, becoming environment-friendly can lower your costs and increase your revenues. That's why sustainability should be a touchstone for all innovation.
- In the future, only companies that make sustainability a goal will achieve competitive advantage. That means rethinking business models as well as products, technologies, and processes.
- Becoming sustainable is a five-stage process, and each stage has its own challenges. Here's how to tackle them and emerge from the recession ahead of the pack.


THE
NEW
MAP
ENERGY, CLIMATE, AND
THE CLASH OF NATIONS
DANIEL YERGIN
WINNER OF THE PULITZER PRIZE


"The best available overview of where the solar industry
finds itself today, and a road map
for how it can reach a brighter future."
—Financial Times
TAMING
the SUN
Innovations to Harness Solar Energy
and Power the Planet
Varun Sivaram

One Sun One World One Grid

‘One Sun, One World One Grid’: PM Modi calls for global solar grid at COP26

PM Modi reiterated that the idea for the One Sun One World One Grid (OSOWOG) initiative was put forth by him at the First Assembly of the International Solar Alliance (ISA) in October 2018

Prime Minister Narendra Modi delivers a speech during for a meeting, as part of the World Leaders' Summit of the COP26 UN Climate Change Conference in Glasgow on Tuesday. PM Modi launched ‘One Sun One World One Grid’ initiative (AFP)

PM Modi delivers India 'panchamrit' at COP26 to fight climate change

the quint

PM Modi's 5 Big Goals for India:

1. Achieving net-zero by 2070

2. Reducing total projected carbon emissions by one billion tonnes starting now till 2030

3. Increasing renewable energy component to 50% of our total energy requirements by 2030

4. Reducing carbon intensity by 45% by 2030

5. Increasing non-fossil energy capacity to reach 500 GW by 2030

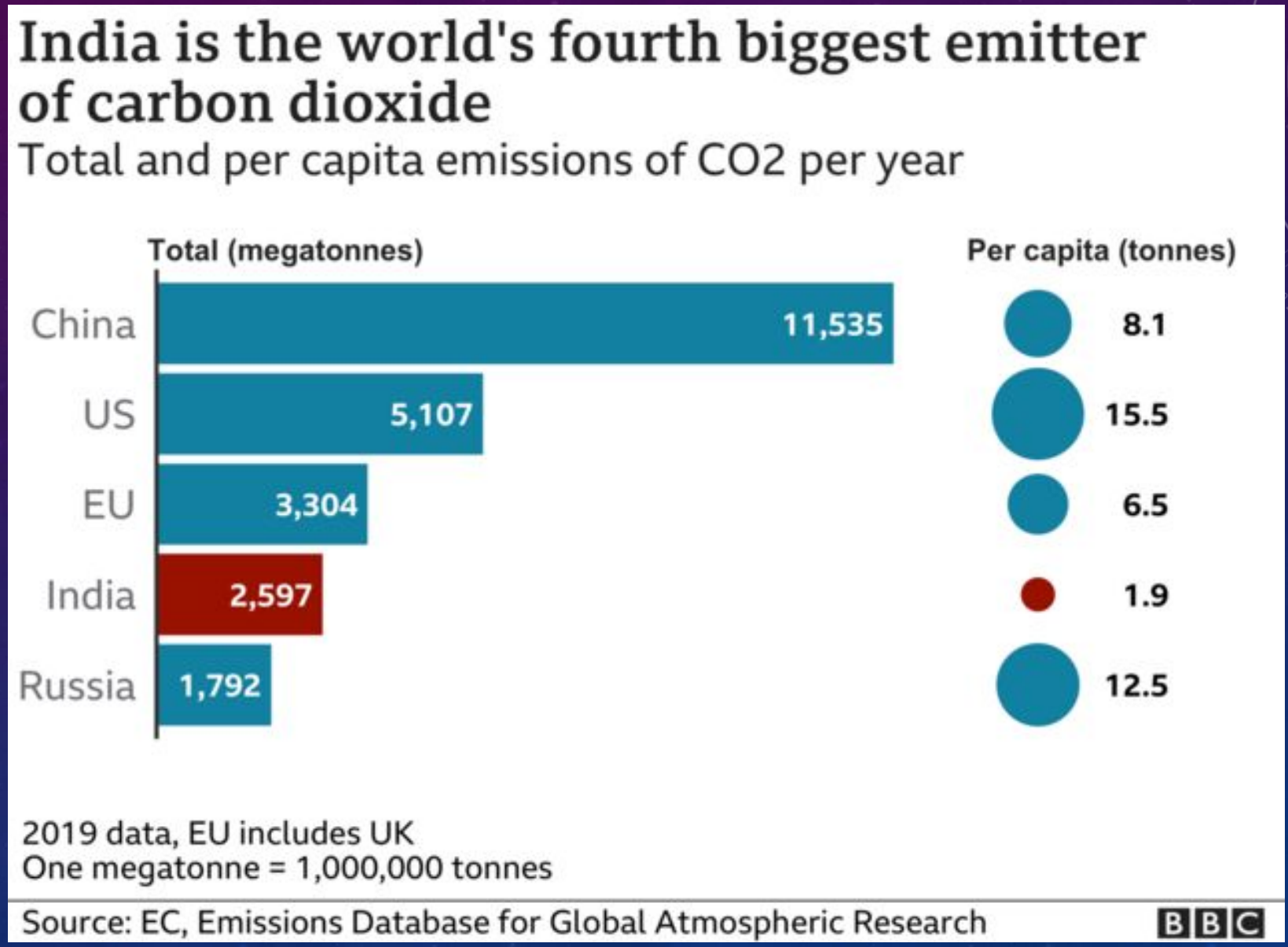
PMO India ✓
@PMOIndia

क्लाइमेट चेंज पर इस वैश्विक मंथन के बीच, मैं भारत की ओर से, इस चुनौती से निपटने के लिए पांच अमृत तत्व रखना चाहता हूं, पंचामृत की सौगात देना चाहता हूं।

पहला- भारत, 2030 तक अपनी Non-Fossil Energy Capacity को 500 गीगावाट तक पहुंचाएगा: PM @narendramodi

10:22 PM · Nov 1, 2021

How India will Play Crucial Role in Mitigating Global Climate Change Risks



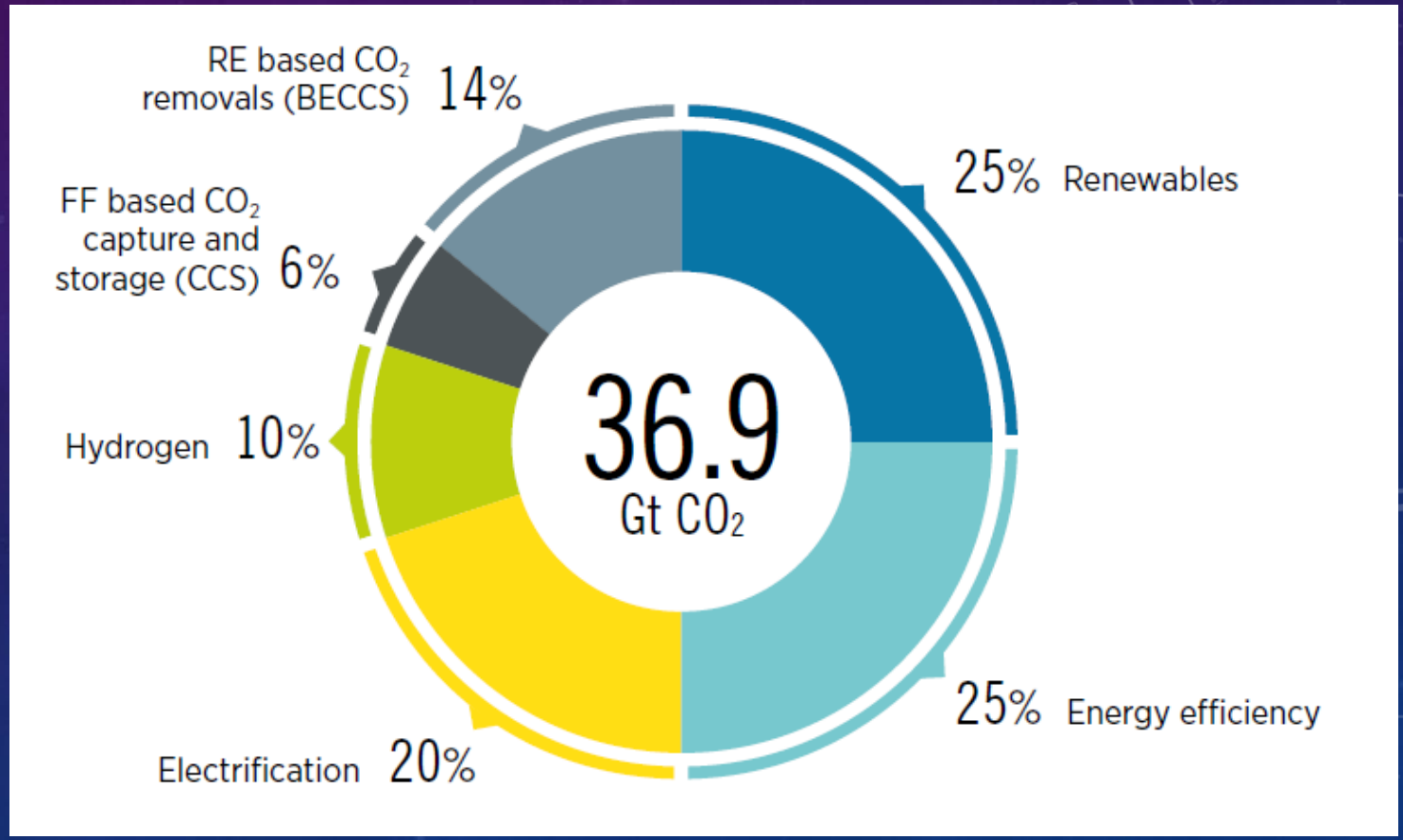

IRENA
International Renewable Energy Agency
WORLD ENERGY TRANSITIONS
OUTLOOK 2022
1.5° C PATHWAY

Path to Net Carbon Zero - Reducing emissions by 2050 through six technological avenues

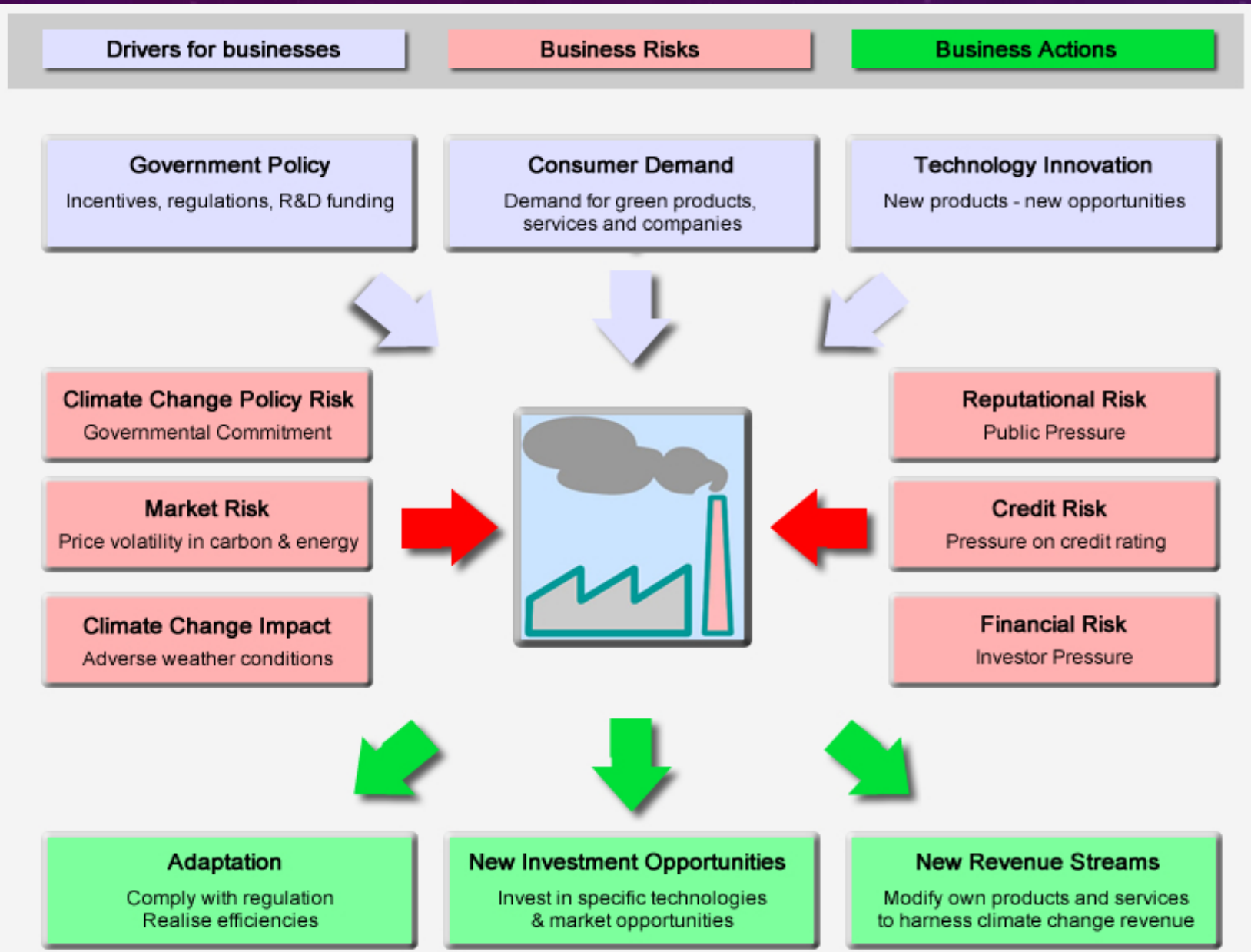
IN 2022, THE NEED FOR THE ENERGY TRANSITION HAS BECOME EVEN MORE URGENT

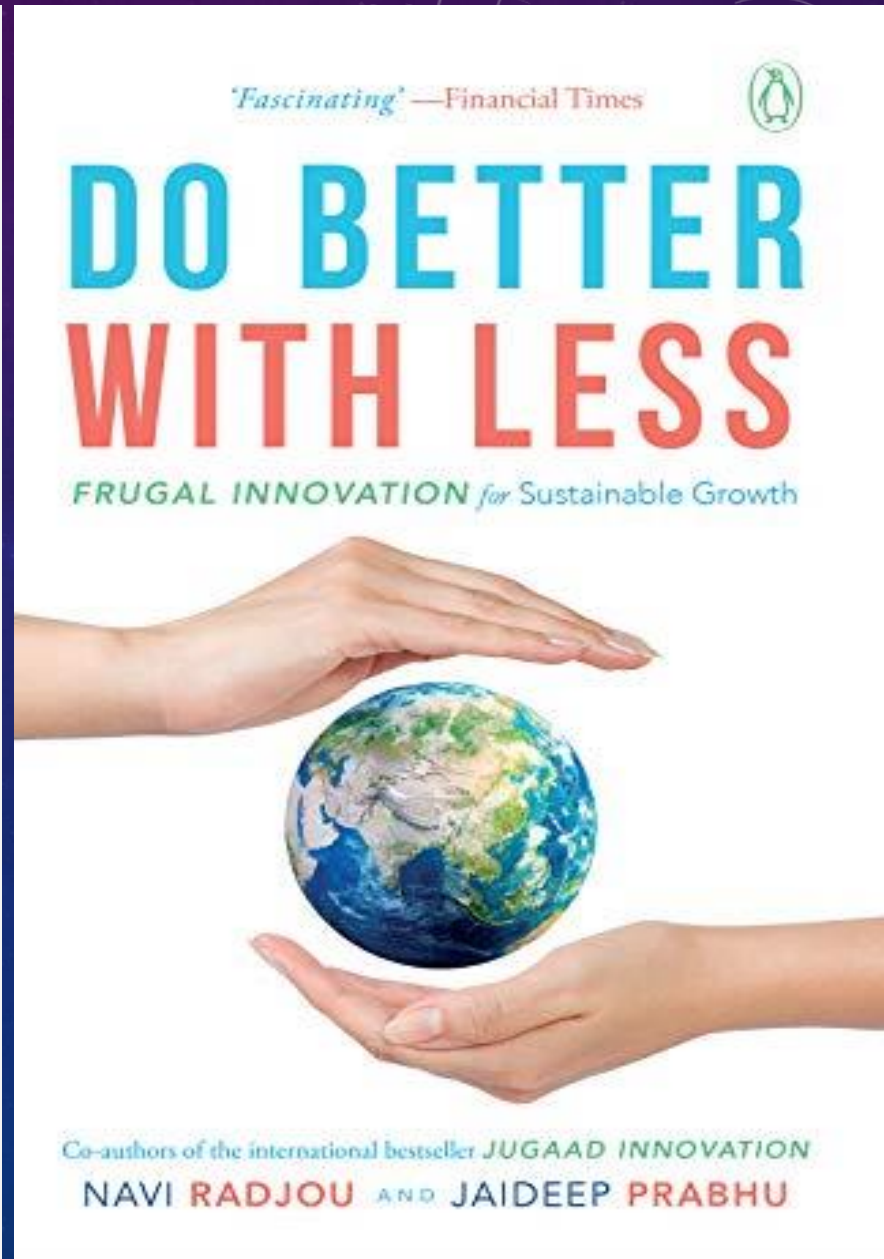
End-use decarbonisation needs to be given greater priority to reduce reliance on fossil fuels in industry, transport and domestic heating

To fulfil the 1.5°C Scenario, the electricity sector will have to be thoroughly decarbonised by mid-century, with solar and wind leading the transformation



How Businesses are Responding to Climate Change?





Source: Getty Images

Global Case Studies

Unilever –Sustainability is not an Option, it is a critical requirement

Unilever

BY 2025, ALL OF OUR PLASTIC PACKAGING WILL BE REUSABLE, RECYCLABLE OR COMPOSTABLE

THE GLOBAL GOALS
For Sustainable Development

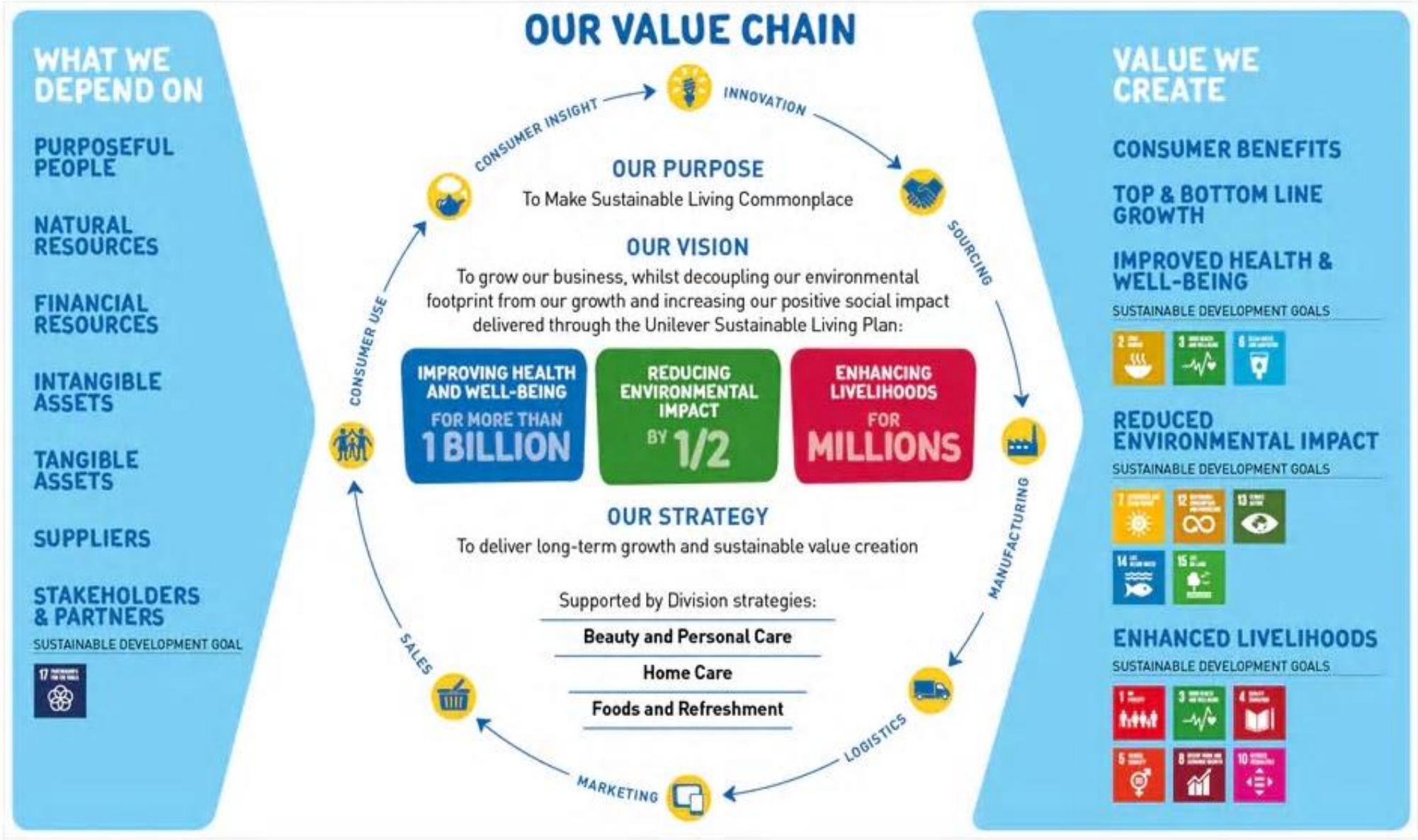
In 2017 our sustainable living brands grew

46%

faster than the rest of the business, and delivered

70%

of Unilever's turnover growth

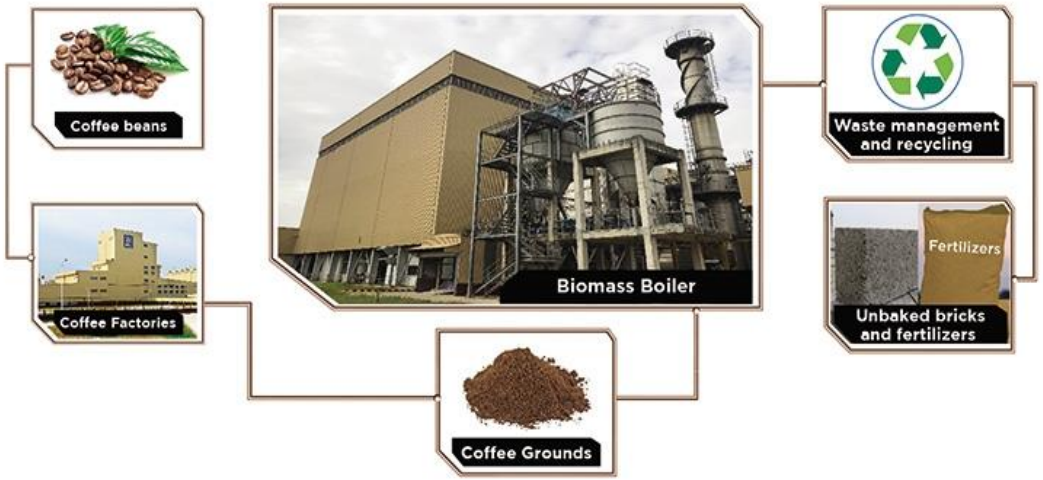


Nestle

DIỄN ĐÀN KINH TẾ VIỆT NAM 2019 ECONOMIC FORUM

Nestlé

STRIVE FOR ZERO ENVIRONMENTAL IMPACTS TO 2030



BIOMASS FROM COFFEE GROUNDS

100% COFFEE GROUNDS RECYCLED AS BIOMASS

COFFEE GROUNDS BIOMASS CONTRIBUTING TO **73 % FUEL** SOURCE FOR BOILER

REDUCING **22,600 CO2** TONNES/YEAR

Nestlé
Good Food, Good Life

Commitment to Environment

Caring for the future

Within our factories and in areas under our control there is a continuous effort to **maximize production** while **minimizing** the consumption of **natural resources** and **reducing** waste and CO_2 emissions.

In our Manufacturing

The **Zer'Eau** project in **Moga** recycles the water extracted from milk and reuses it for processing, enabling us to save **25%** of water used at the factory

In the last 15 years for every tonne of production, we have:

Reduced the usage of energy by around **47%↓**

Reduced water usage by around **53%↓**

Reduced CO_2 emissions by **55%↓**

Reduced generation of waste water by around **55%↓**

In our Packaging

In 2016
800 tonnes
reduction in packaging material through packaging optimisation

"WE NEED TO DO MORE TO SAFEGUARD OUR WATER. WE CAN'T DO IT ALONE, NO ONE CAN. THAT'S WHY WE ARE WORKING TOWARD MEANINGFUL CONVERSATION AND INFORMED ACTION."

Nelson Switzer
Chief Sustainability Officer

Project GivePack

REUSABLE PACKAGING STARTUP

It's all about creating a circular system, in which containers and other receptacles are reused

Forbes


CARBON ENGINEERING
Could capture 1 million metric tons of CO_2 from the air each year
Quartz


ENERGY VAULT
Building a sustainable grid, brick by brick
Forbes


IKEA BANS
SINGLE-USE PLASTIC
IKEA will phase out all single-use plastic products from its shops and restaurants by 2020
CNN
IKEA
IKEA

COCA-COLA RECYCLES OCEAN WASTE

Coca-Cola introduces first bottles made using ocean plastic waste

Designboom

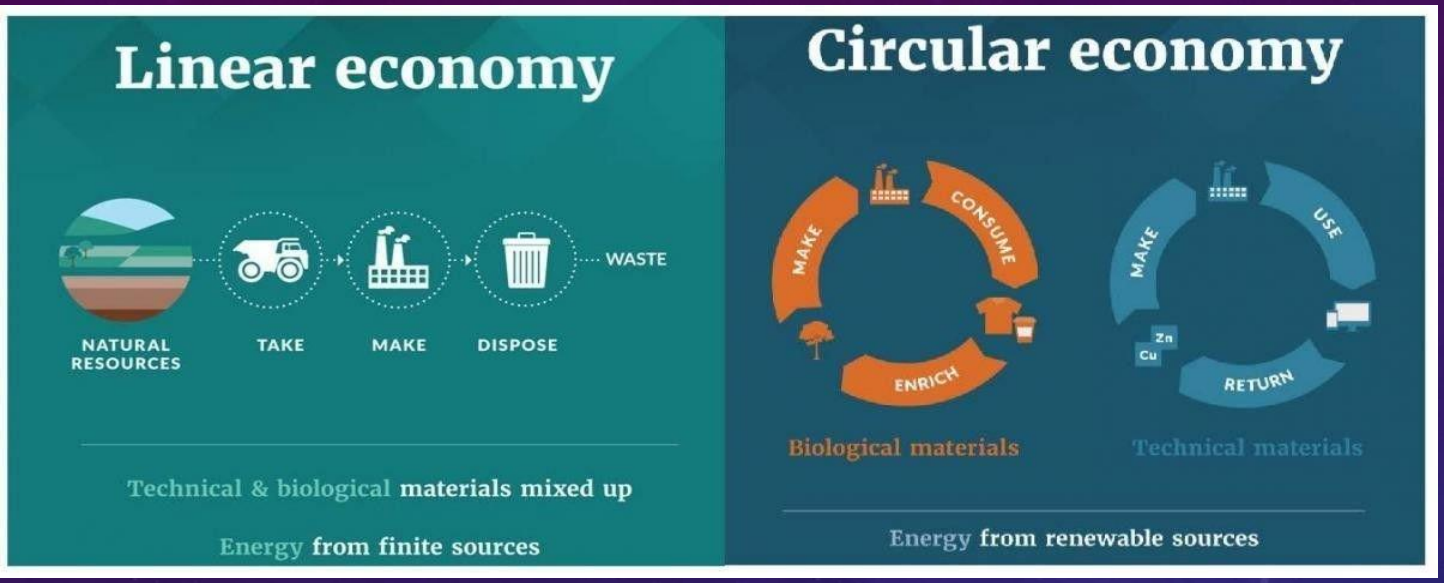
Source: Getty Images

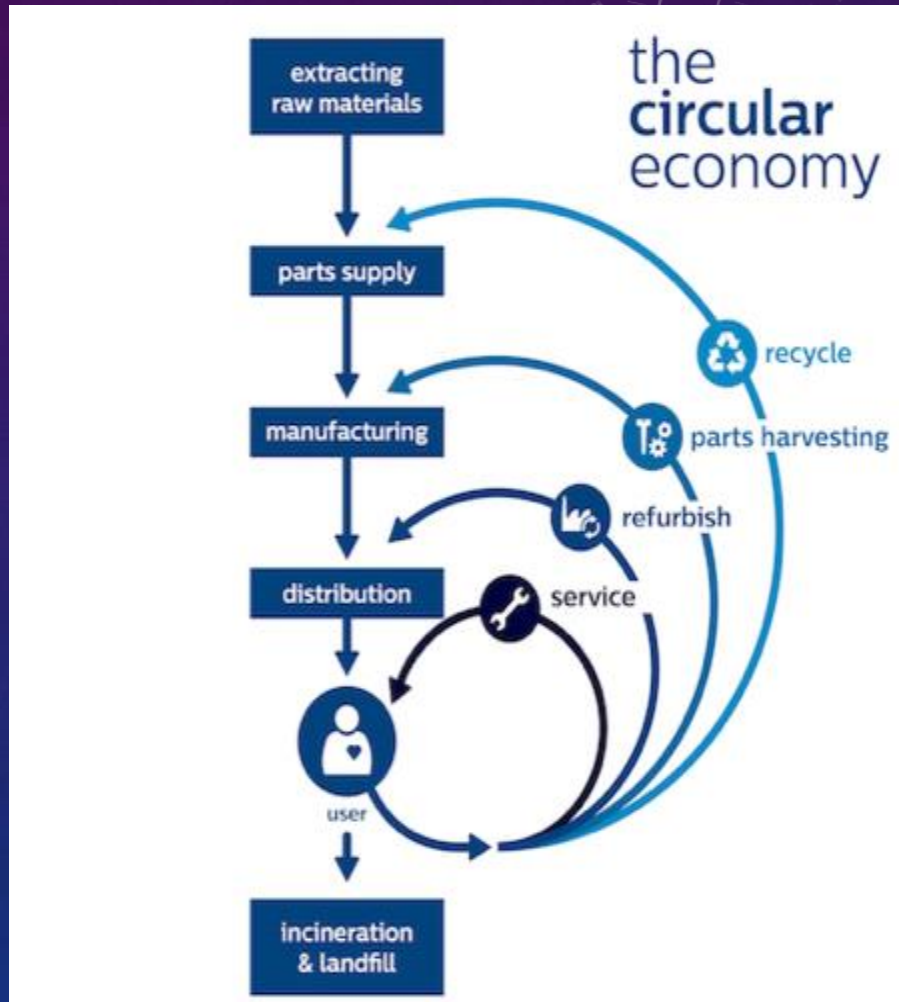
Indian Case Studies

Source: Getty Images

Circular Economy

What is Circular Economy? And Why it is a winning Strategy?





Case Studies

	Examples
REgenerate	• Shift to renewable energy and materials • Reclaim, retain, and restore health of ecosystems • Return recovered biological resources to the biosphere
Share	• Share assets (e.g. cars, rooms, appliances) • Reuse/secondhand • Prolong life through maintenance, design for durability, upgradability, etc.
Optimise	• Increase performance/efficiency of product • Remove waste in production and supply chain • Leverage big data, automation, remote sensing and steering
Loop	• Remanufacture products or components • Recycle materials • Digest anaerobic • Extract biochemicals from organic waste
Virtualise	• Books, music, travel, online shopping, autonomous vehicles etc.
Exchange	• Replace old with advanced non-renewable materials • Apply new technologies (e.g. 3D printing) • Choose new product/service (e.g. multimodal transport)

What Can Happen in Future if we don’t act now?