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## 1. Executive Summary

India has an aspirational goal of becoming a net zero country. India is the world's third-biggest emitter of Carbon Dioxide ( $CO_2$ ) after China and the US in absolute (total) terms. However, the per capita  $CO_2$  emission of India is much below the global average.

To reduce its emissions, India is working in different areas of sustainability with set targets. At the 26th Conference of Parties (COP26) in Glasgow, India pledged to become net zero by 2070 along with four immediate targets for 2030. To take its non-fossil fuel energy capacity to 500 GW; to meet 50 percent of its energy requirements from renewable energy; to reduce the carbon intensity of its economy by more than 45 percent; and to reduce the total projected carbon emissions by one billion tonnes.

Corporates can contribute significantly towards India's trail towards net zero. Salesforce has introduced Sustainability as a core value and a well defined Climate Action Plan which includes six sustainability priorities and acts as a blueprint for the journey towards net zero.

Salesforce became a net zero company in 2021. Salesforce's Net Zero Cloud solution is an important tool to accelerate the journey to net zero. It tracks current emissions, forecasts emission patterns, and enables decision making.

# Salesforce's Net Zero Cloud helps reduce the carbon accounting process from six months to just six weeks.

Further, Salesforce is enabling sequestration of 100 gigatons of carbon through conservation, restoration, and growth of 1 trillion trees, oceans protection and energising the ecopreneur revolution.

Commissioned by Salesforce, and prepared by Access Partnership, this report focuses sustainability efforts in India. It examines the policy environment, evaluates the economic and environmental gains from transitioning to cloud computing, and provides key insights on business sentiment and readiness to address climate change. The report highlights the climate change efforts of Salesforce and provides policy recommendations for India to accelerate climate action.





#### The report finds:

- India has shown commitment to national and global climate action by reducing carbon emissions and accelerating investments in renewable energy. It has strengthened Nationally Determined Contribution (NDC) targets, aiming to increase the share of renewable energy in electricity generation to 50 percent, and reduce emissions intensity by 45 percent by 2030. Collaboration with private sectors in reducing dependence on fossil fuels, and prioritising investments in emerging carbon removal and energy efficient technologies, can bring it closer to the 1.5°C temperature pathway.
- Cloud adoption in India is rising and will have a transformative impact on energy consumption, carbon emissions and waste management. With the national data centre industry poised for rapid growth, electricity consumption and carbon emissions could reduce as IT workloads are getting shifted to the cloud. Shifting data centres on renewable energy will amplify CO<sub>2</sub> emission reduction to over 60 million Metric tonnes (Mt) by 2030.
- Stakeholders are increasingly demanding transparent and consistent reporting on sustainability efforts. This has created a demand for technical solutions and skills required for emission data management, and also influences the business decisions of selecting business partners.

# The report makes five recommendations that India can consider for accelerating its efforts to address climate change:



**Develop cutting-edge climate technologies:** India should support innovations that reduce emissions and increase energy efficiency. Further, it should promote startups, ecopreneurs, and partnerships, those who are working on innovative climate change initiatives.



**Increase investment in cloud:** The Indian government should encourage adoption of cloud computing considering its lower environmental impact. It reduces energy consumption, waste generation, and carbon emissions. The report commissioned by Salesforce reveals that a reduction of 2.2 million Mt of CO<sub>2</sub> emission can be achieved in 2022 by migrating to cloud, which rises to 2.8 million Mt if cloud operates fully on renewable power.



Address sustainability skills gap: Organisations need to focus on creating a pool of workforce equipped with skills to work in the field of climate change. Upskilling initiatives should prepare employees to understand the imperative for climate action and make decisions aligned with their organisational goals.



**Environment AI:** There are many potential uses of harnessing AI to achieve sustainability outcomes. It has already been used in India for detecting arsenic pollution in drinking water; help monitor air pollution hotspots; and real-time flood forecasting. Other potential uses include monitoring deforestation; enable smarter decision-making for decarbonising industries; and how to efficiently allocate renewable energy.



Adopt a shared digital platform to track emissions: Government and organisations should adopt a shared digital platform to track emissions, and forecast emission patterns. Having a shared digital platform will ensure better decision making and a single source of truth when measuring and tracking emissions within their own organisation and potentially their supply chain.

# 2. India and Sustainability

The exponential rise in the Indian population has increased the load on its natural resources. The migration from rural to urban cities has also created stress on urban infrastructure.

# For a growing economy like India, one of the main sustainability challenges is its high dependency on fossil fuels and associated emissions.

Despite all the efforts taken by India, emissions are expected to rise further. According to the Climate Action Tracker (CAT), based on current targets and policies, the emissions increase is 'consistent with 4°C¹. The other sustainability challenges in India revolve around natural resource depletion, temperature rise, among others. India is increasingly vulnerable to the effects of climate change. Approximately 1.5 million more people are projected to die each year due to higher temperatures.² Rising sea levels will also impact infrastructure, natural ecosystems, and livelihoods, especially in coastal cities like Mumbai and Chennai.

# Considering the diversity of India, the government cannot drive Sustainability initiatives alone. To accelerate the efforts, the involvement of corporates, NGOs, communities and individuals is a must.

India has been working on different sustainability initiatives like its Sustainable Development Goals (SDGs) goals, river rejuvenation, resource efficiency, air pollution, climate change and clean energy.

India has achieved some success through its efforts. In the Climate Change Performance Index (CCPI) 2022, it held 10th position and was rated high in the Greenhouse Gas (GHG) emissions, energy use, and climate policy categories, and medium in renewable energy.<sup>3</sup> As part of the Paris Agreement, India announced Nationally Determined Contribution (NDC) targets.<sup>4</sup> It has made substantial progress on two of the three targets. Under the first target of lowering



the emissions intensity of its GDP by 33-35 percent, India achieved a 21 percent reduction. On the second target of increasing fossil-free electricity generation to 40 percent by 2030, India achieved 38 percent of non-fossil fuel capacity.

# This makes India the only country among G20 nations to be meeting its NDC targets.<sup>5</sup>

While the third target of achieving 2.5-3 billion tonnes of carbon sink by 2030 through afforestation efforts, requires more work.

Four additional targets for 2030

To take its non-fossil fuel energy capacity to

500 GW

To reduce the carbon intensity of its economy by more than

45%

To meet

**50**%

of its energy requirements from renewable energy

To reduce the total projected carbon emissions by

1 billion



The Indian government's policy actions and investments will significantly impact how successfully it can combat climate change at home and provide leadership globally. Domestically, there is growing political consensus on low-carbon focused development that prioritises poverty reduction and sustainable development. India announced its National Action Plan on Climate Change (NAPCC) in 2008 as a roadmap to address climate change. NAPCC has eight missions including enhanced energy efficiency, sustainable habitats, a 'green' India, sustainable agriculture, and strategic knowledge for climate change.

On the international front, India has begun taking an active role in climate negotiations and forged progressive partnerships to address various aspects of climate change adaptation, mitigation, and resilience, including with the US and EU on clean energy, and platforms such as the Coalition for Disaster Resilient Infrastructure<sup>7</sup> and the International Solar Alliance (ISA)<sup>8</sup> with France.



# 3. Salesforce Approach to Sustainability

Sustainability is one of Salesforce's core values along with Trust, Customer Success, Innovation, and Equality. The core values are inseparably linked to the company's thinking and its initiatives around climate action. Salesforce has been on a sustainability transformation journey for over a decade now. During the journey, their climate strategy was built which started by asking three simple questions - What (What do we do? And why?, product and services, mission), How (How do we do it?, operating mode and value chain), and Who (Who do we influence? Employees, customers, society).

The result was Climate Action Plan<sup>9</sup> which acts as a blueprint for the journey to net zero and outlines six sustainability priorities of Salesforce.



**Emissions reduction** by initiatives like business travel emission reduction, low carbon cloud infrastructure, work from anywhere, and supplier enablement.



Carbon removal by enhancing carbon removal tools of present and scaling future technology-based carbon removal opportunities.



**Trillion trees and ecosystem restoration** by taking action to enhance the world's natural systems to sequester carbon from the atmosphere.



**Education and mobilisation** by raising awareness of climate change and enabling behaviour change to embrace low-carbon solutions.



**Innovation** by supporting and investing in ecopreneurs and their ideas and technologies to scale.



Regulation and policy by working with policymakers on topics like emission reduction, reorientation of economies, and fostering an



Salesforce has increased investment in emission reduction initiatives, achieved Net Zero across its value chain, 100 percent renewable energy for its operations, and funded more than 40 million trees as part of its 100 million trees goal. Today, Salesforce is a net zero company.

In the year 2022, Salesforce initiated the institutionalisation of its sustainability program in India to make its sustainability journey more inclusive. Just ahead of COP26, Salesforce announced two new natural climate solutions:<sup>10</sup>

A global tree equity and urban reforestation initiative

to engage ecopreneurs, organisations and volunteers in cities with limited access to green spaces to make cities greener around the world.



Salesforce's first blue carbon program to conserve, protect, and restore coastal and marine ecosystems, and to purchase one million tons of blue carbon credits over four years.



To reduce supply chain emissions, Salesforce has included a Sustainability Exhibit in its procurement contract, requiring suppliers to take up a Science-Based target that aligns with the 1.5°C pathway.¹¹ Further, Salesforce has been working extensively towards ecosystem restoration. One of the significant efforts is the One Trillion Tree Initiative with 1t.org., which has a local chapter in India as well.¹² Salesforce sets a goal to conserve and restore 100 million trees by 2030. Salesforce India has undertaken a nationwide tree plantation effort in collaboration with various partners. In 2022, it aims to plant 5,000 trees across Delhi, with a focus on youth engagement at schools with hands-on tree planting events and in-classroom learning.¹³

#### **Net Zero Cloud 2.0**

Salesforce's Net Zero Cloud 2.0 is a sustainability management solution that enables organizations to go net zero now. In this new era of climate accountability, organizations' carbon data will need to be as trusted as their financial data. Net Zero Cloud 2.0 has been completely rebuilt to offer trusted reporting, deeper insights, and supplier management.

With Net Zero Cloud 2.0, organizations can get sustainability insights with rich analytics dashboards, powered by Tableau, to achieve their climate goals and take action with:

- Carbon Footprint Forecast: Organizations can find the fastest path to net zero with 'what-if' analysis to visualize progress and alignment to their climate action commitments.
- Science-Based Targets: Setting goals in line with science-based targets and measuring progress.<sup>14</sup>
- **Supplier Management:** Track scope 3 emissions across the entire value chain and help suppliers and distributors reduce emissions.
- **Waste Data Management:** Organizations can upload and track hazardous and non-hazardous waste management data and treatment methods like landfilled, composted, or combusted all in one place.



# 4. Economic and Environmental Impact of Moving to the Cloud

Climate change impacts economic growth. Estimates suggest that by the year 2100:

- GDP per capita will decline 2.6 percent if global temperature increase is held below 2°C, but this rises to 13.4 percent in a 4°C scenario based on projections of temperature and precipitation changes, and the effect on labour productivity in different sectors.<sup>15</sup>
- GDP will decline 10 percent at 3°C of global warming due to declining agricultural productivity, sea-level rise and increased health expenditure.<sup>16</sup>
- GDP will decline 90 percent at 3°C of global warming, based on the historical relationship between temperature and GDP, capturing direct effects (such as agriculture productivity, water scarcity) and indirect effects (such as inflationary pressures, transition risks).<sup>17</sup>

Estimates also suggest the national poverty rates could rise by 3.5 percent by 2040 compared to a zero-warming scenario, equating to approximately 50 million more poor people.<sup>18</sup>

# India could gain approximately USD11 trillion by 2070, by leading decarbonisation efforts and transitioning to a green economy.<sup>19</sup>

It can achieve this by supplying the products and services the world will need to address climate change, such as green hydrogen and negative emission technologies, as well as accelerating investments in technologies that reduce carbon emissions.

#### Investments in cloud technologies to reduce emissions

Cloud computing offers long-term economic gains including greater flexibility, cost efficiency, speed, and business continuity. An often-overlooked advantage is its impact on the environment. It reduces energy consumption, waste, and carbon emissions.<sup>20</sup>

A recent study by S&P Global Market Intelligence has shown significant energy savings of 79 percent from moving business applications and IT workloads from on-premises enterprise and public sector data centres to the cloud. With data centre capacity expected to double to 1GW in India by 2023, there will be a substantial reduction in energy consumption and carbon emissions, as IT workloads are moved to the cloud. Based on these estimates, research from Access Partnership projects:

#### USD 2.2 billion

cost savings in 2022 from reduction in energy use.\*

#### 2.2 million

Mt CO<sub>2</sub> emissions reduction in 2022 due to migration to cloud

#### 48 million

Mt CO<sub>2</sub> emissions reduction between 2022 – 2030 due to migration to cloud

#### **USD 24 billion**

cost savings between 2022 – 2030\* from reduction in energy use

#### 2.8 million

Mt CO<sub>2</sub> emissions reduction in 2022 if cloud operators source 100 percent renewable power

#### 60 million

Mt CO<sub>2</sub> emissions reduction between 2022 - 2030 if cloud operators source 100 percent renewable power



Reduction in energy use due to higher server utilisation rate, the deployment of highly energy-efficient servers as well as the use of advanced power distribution systems and cooling technology by cloud data centres.



# Reducing emissions from data centres is a key part of the decarbonisation program at Salesforce.

It is addressing this by increasing the efficiency of software code, which helps achieve more with each kilowatt hour of energy it uses. As it operates in shared colocation facilities, it also works closely with data centre partners to achieve high-efficiency, water-free, and zero-waste infrastructure that reduces energy use and minimises cloud's carbon impact.

Salesforce is also encouraging other cloud companies and tenants of co-location facilities to maximise the use of renewable energy solutions and is a signatory of the 'Corporate Colocation and Cloud Buyers Principles' to aid sustainability efforts.<sup>21</sup>

60 million Mt emissions reduction would be equivalent to approximately:<sup>22</sup>

- GHG emissions from 13 million passenger cars in India, or 243 billion kilometres driven on India's roads
- CO<sub>2</sub> emissions from 16 coal-fired plants in one year
- CO<sub>2</sub> emissions from consumption of 140 million barrels of oil
- CO<sub>2</sub> emissions from charging 7.3 trillion smartphones
- GHG emissions avoided by recycling 2.6 billion trash bags
- GHG emissions avoided by 16,000 wind turbines running for a year
- Carbon sequestered by planting 993 million tree seedlings over 10 years

Detailed estimates are included in Appendix I.





# 5. Business Sentiment in India on Sustainability

Salesforce commissioned YouGov to conduct a survey  $^{23}$  of over 1,000 managers representing small, medium, and large businesses in India. Key findings included:



#### Stronger action on climate change

The Government of India has increased the pace of climate action, renewed NDC targets, and pledged to become Net Zero by 2070. These efforts have resonated well in the business community, with the public sector being one of the top three sectors (30 percent) thought to be doing the most to help meet and address net zero targets. Despite the positive sentiment towards government action to date, eight in ten (83 percent) managers support a more ambitious net-zero target of 2050, with six in ten strongly supporting this action. In addition, 40 percent believe the government should be doing more to address climate change. Renewable energy projects have been a priority for the government, and eight in ten (79 percent) managers support the provision of subsidies and incentives to businesses for the development of renewable energy technology with half (49 percent) saying they strongly support this action. This is likely driven by the continued dependence on fossil fuels to meet energy demand. In 2020, fossil fuel subsidies were 7.3 times larger than subsidies for clean energy.



#### **Emphasis on sustainability commitments**

Almost two thirds (63 percent) of managers surveyed note that if a supplying business had a net zero target, then it would make them more likely to purchase their products or services. Thus, for businesses having sustainability goals and net zero targets is an important factor for doing business now and more so into the future.



#### **Future growth opportunities**

Business managers are seeing the transition to net zero as a growth opportunity, resulting in higher jobs and economic activity – they are three times as likely to think that achieving a net zero economy by 2050 in India will result in more jobs than less jobs (58 percent compared to 18 percent).

A majority of surveyed managers (84 percent) noted the importance of technology in helping to achieve a net zero target, with almost six in ten (57 percent) saying the role of technology will be very important. This underlines the importance of technologies such as cloud computing in supporting businesses in their net-zero goals.



#### 6. Recommendations

This section provides five key recommendations to advance India's efforts on addressing climate change.



#### Develop cutting-edge climate technology

India's climate efforts should bring a renewed focus on developing and nurturing technological innovations that reduce emissions and increase energy efficiency. Almost six out of ten managers noted that the role of technology was very important in helping achieve a net zero target by 2050. This can be achieved by addressing barriers to their deployment, providing funding for new ideas to startups and ecopreneurs. While it has accelerated investments in renewable energy, India must also prioritise emerging carbon-removal technologies as well as more efficient, "smart" technologies and processes that optimise energy use for households and businesses.



#### Increase investment in cloud

Cloud computing offers an economic and environmental opportunity. It reduces energy consumption, and carbon emissions through server virtualisation and shifting of workloads across the globe and less end-of-life IT wastage. This report has shown India's migration to cloud could reduce  $\mathrm{CO}_2$ , emissions reductions will rise even further if cloud operators begin sourcing 100 percent renewable power for their operations.

Initiatives to encourage this shift to the cloud should be implemented. These may include policies on the use of sustainable sources of energy, and financial incentives for the use of energy-efficient technologies.



#### Address sustainability skills gap

The workforce needs to pivot to capabilities, skill sets, and tools necessary for a net zero economy transition.

New hiring should ensure climate-related expertise, and upskilling initiatives should prepare employees to understand the imperative for climate action and make decisions in-line with the climate agenda of their organisations.

Employees will also need to acquire capabilities in leveraging big data and conducting modelling exercises of physical and transition-related risks of climate change, and new roles will be established such as carbon accountants, researchers, and energy consultants.



#### **Environment AI.**

There are many potential uses of harnessing AI to achieve sustainability outcomes. It has already been used in India for detecting arsenic pollution in drinking water; help monitor air pollution hotspots; and real-time flood forecasting. Other potential uses include monitoring deforestation; enable smarter decision-making for decarbonising industries; and how to efficiently allocate renewable energy.



#### Adopt a shared digital platform to track emissions.

Government and organisations should adopt a shared digital platform to track emissions, and forecast emission patterns. Having a shared digital platform will ensure better decision making and a single source of truth when measuring and tracking emissions within their own organisation and potentially their supply chain.



# Appendix I. Methodology

#### **Economic and Environmental Impact Moving to the Cloud**

The modelling aims to examine the impact of cloud technologies and associated data centres on energy reductions and carbon emissions. It is based on estimates from a recent study by S&P Global Market Intelligence which shows significant energy savings, of 79 percent, from moving business applications and IT workloads from on-premises enterprise and public sector data centres to the cloud.<sup>24</sup>

As the data centre capacity is expected to double to 1GW in India by 2023, the model estimates a substantial reduction in energy consumption and carbon emissions, as IT workloads are moved to the cloud. In addition, when designing server and power distribution systems, cloud service providers (CSPs) invest in technologies to ensure a higher level of server utilisation and efficient resource allocation. As cooling systems of cloud facilities can account for up to 55 percent of a data centre's energy consumption, the use of advanced cooling systems, ventilation, and airflow management in cloud infrastructure will contribute to further energy reduction.<sup>25</sup>

Based on this premise, the model provides annual estimates from 2022 to 2030 on:

- CO<sub>2</sub> emissions due to migration to cloud infrastructure;
- CO<sub>2</sub> emissions due to renewable energy use by cloud service providers; and
- Cost savings from reduction in energy use.

The estimates are based on the following assumptions and inputs:

- Data centre capacity in India has reached 499MW<sup>26</sup> in 2021, 102MW<sup>27</sup> has been utilised in 2020.
- Data centre capacity is estimated to grow at a CAGR of 16 percent<sup>28</sup> from 2024 to 2030 after reaching 1008 GW in 2023.
- Reduction in CO<sub>2</sub> emissions (per MW per year (metric tonnes)) totalled 3,449 and increased to 4235 with 100 percent renewable energy.<sup>29</sup> It is assumed that all the extra data centre capacity will be taken up in the following years to calculate the maximum amount of CO<sub>2</sub> emissions per year.
- Electricity consumption in 2021 amounted to 1227TWh, and will increase 5 percent per year (2022-2030).<sup>30</sup>
- Electricity cost per kWh is USD 0.10735<sup>31</sup> and data centres are responsible for 2 percent of total electricity consumption in India.<sup>32</sup>

	2021 (Base)	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total (2022 – 2030)
Data centre capacity (MW)	499	754	754	1,169	1,356	1,573	1,825	2,117	2,456	2,849	
Reduction in CO <sub>2</sub> emissions from efficiency (Mt)	1,369,253	2,248,748	2,248,748	3,681,049	4,326,304	5,074,801	5,943,056	6,950,233	8,118,558	9,473,815	48,941,358
Reduction of CO <sub>2</sub> emissions from the use of renewable energy (Mt)	1,681,295	2,761,220	2,761,220	4,519,931	5,312,235	6,231,308	7,297,432	8,534,136	9,968,714	11,632,823	60,094,709
India's electricity consumption (GWh)	1,227,000	1,288,350	1,352,768	1,420,406	1,491,426	1,565,997	1,644,297	1,726,512	1,812,838	1,903,480	
India data centre electricity consumption (GWh)	24,540	25,767	27,055	28,408	29,829	31,320	32,886	34,530	36,257	38,070	
Cost savings due to energy reduction (USD)	2,074,366,200	2,178,084,510	2,286,988,736	2,401,338,172	2,521,405,081	2,647,475,335	2,779,849,102	2,918,841,557	3,064,783,635	3,218,022,816	24,016,788,943

Source: Access Partnership Research



# Appendix II. Abbreviations

CAT: Climate Action Tracker

CCPI: Climate Change Performance Index

EnSyde: Environment Synergies in Development

ESG: Environmental, Social and Governance

GDP: Gross Domestic Product

GHG: Greenhouse Gas

ISA: International Solar Alliance

MoEFCC: Ministry of Environment, Forest, and Climate Change

NAPCC: National Action Plan on Climate Change

NDC: Nationally Determined Contribution

SDG: Sustainable Development Goals

VPPA: Virtual Power Purchase Agreement





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