Holiday for nature: a way forward in sustainability of the planet

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Abstract This paper proposes to observe a day’s break as the Planet Day (While the proposed day can also be named as the Gaia Day (after James Lovelock), Planet Day seems to be simpler and easier name for better understanding by the masses and greater connect of the issues with them. Hence, here the proposed day is termed as the Planet Day) every month to allow the nature to heal and ensure sustainability of the planet in the long run. Based on the concept of sustainable degrowth, the paper carries out benefit–cost analysis of the proposed Planet Day and presents a framework based on extensive literature review, secondary data analysis and stakeholders’ (Here, participants are referred to as one of the “stakeholders” in the sense that every human being who lives on this planet is accountable for the harm done to it and is impacted by ecological degradation. Hence, they are supposed to contribute to healing of the nature through appropriate initiatives both individually and collectively. In addition to the common residents, there are other stakeholders of the ecology as well such as the government, the business enterprises, and manufacturing firms, etc.) perceptions through a non-random convenience sample survey. The paper finds that the net benefit from the Planet Day amounts to be USD 9002.37 billion across the world and USD 102.48 billion for India per annum. The respondents also perceive the proposed Planet Day as ecologically and economically beneficial and thus support the idea of healing time for the planet. However, a critical challenge is to take different stakeholders on board, ensure their active participation, and design appropriate institutional mechanisms for its successful implementation.

Keywords Sustainability · De-growth · Planet day · Nature · Holiday

Introduction

The limitations of the approach to economic development and the importance of environment were realized way back in the 1960s (Bates, 1964; Boulding, 1966, 1970; Daly, 1968; Young, 1974). However, the conditions have worsened since then with increased population, production activities, consumption and pollution (Xing et al., 2019; Zeng et al., 2017). The subsequent debates on growth versus development and ecology versus economy (Costanza, 2003) have recognized the importance of an ecology-based approach to development (Dragulanescu &
Dragulanescu, 2014). As a consequence, new models such as degrowth (Martínez-Alier et al., 2010; Sandberg et al., 2019; Trainer, 2020), green growth (Capasso et al., 2019; Ulucak, 2020; Ojha et al., 2020; Sandberg et al., 2019), limits to growth (Meadows et al., 1972), doughnut economics (Raworth, 2012; Ross, 2019), steady-state economy (Czech & Daly, 2004; H. Daly, 1991) and ecological economics (Daly, 1991; Daly & Farley, 2011) have emerged that emphasize on ecological sustainability.

While the ecology has a threshold capacity to absorb the waste (Hussen, 2004a), the need for a break to heal itself is well-recognized. A possible approach to facilitate sustainable development can be granting a day holiday each month for nature in the name of Planet Day. Given that nature continuously degrades or recycles the waste generated by anthropogenic activities such as fossil fuel combustion, industry, biomass burning, construction activities (Hussen, 2004a), the Planet Day can give a day’s break from all such anthropogenic activities that distort earth’s natural mechanism and the atmosphere.

This paper explores if a day’s break as the Planet Day every month would allow the nature to heal and ensure sustainability of the planet. The specific objectives of the paper are, therefore, to understand the issue of sustainability of the planet, analyse the implications of the proposed Planet Day for the environment and the society, and people’s perceptions in this regard. Given that the degradation of nature has considerable economic and social costs (OECD, 2018), including natural catastrophes, the findings of the paper would provide valuable directions toward sustainable development. Based on the concept of sustainable degrowth, the paper carries out benefit–cost analysis of the proposed Planet Day and presents a framework based on extensive literature review, secondary data analysis and stakeholders’ perceptions through a non-random convenience sample. The Online questionnaire was disseminated through social media that covers the audiences in contact and cross references to capture larger masses from India.

The paper has eight sections. Section 2 discusses the sources of data used, and the overall methodological approach followed in the paper. The present situation of the planet is given in the next section. At the same time, the fourth section presents the idea of a holiday for nature and its implications; the subsequent section analyses people’s perceptions in this regard along with the implementation challenges. The major findings of the paper and their policy and related institutional implications are highlighted in the last section.

**Initiatives for and condition of ecological sustainability**

Environmental initiatives

The existing studies suggest measures such as payment for environmental services (PES) (Behera et al., 2011), community joint forest management (Behera, 2009), institutional dynamics and natural resource management (Behera, 2008) for sustainable management of natural resources. There are also multiple international organizations (e.g., IPCC, IUCN, UNEP, Amnesty International), treaties (e.g., IPBES, UNFCC CoP series, Paris agreement 2015, Rio summit 1992), alliances (e.g., International Solar Alliance) and agreements toward protecting the planet. The Paris Agreement (CoP 21, 2015) is considered a robust step to curb climate change and maintain environmental sustainability. It is based on a legally binding agreement along with a transparent and accountable system. The Nationally Determined Contributions (NDCs) report greenhouse gas inventories every two years and revisit the pledge every five years (United Nations, 2015a). However, these reports are subject to review by technical experts and multilateral examination (United Nations, 2015a). Besides, the United Nations (UN)’s Sustainable Developmental Goals (SDG) aims at achieving a better and more sustainable future for all with a set of 169 goals under 17 broad targets by 2030 (United Nations, 2015b).

The other initiatives by the UN include the commemoration of ‘International Days’ to create awareness for conservation and protection of a specific component of nature, such as the World Wildlife Day (March 3) for wild flora and fauna, the International Day of Forests (March 21) for all types of forests, the World Water Day (March 22) for conservation of water, the World Ozone Day (September 16) for the ozone layer, and the World Environment Day (June 5) and the Earth Day (April 22) for the earth and its ecosystem (United Nations, 2021a). The days are recognized by various governments, national and international organizations.
Besides, the Clean-Up Australia Campaign and subsequently the Clean-Up the World campaign (UNEP, 1993) and their actions successfully clean up the environment. Other such global programmes like Harmony with Nature Programme (UN), Earth Hour (WWF), Time for Nature Campaign (UN) are also well recognized. Importantly, the above mentioned days are completely voluntary and thus have no legal or regulatory binding (The United Nations General Assembly, 1972, 1993, 2001, 2009, 2013, 2019; United Nations, 2021a). As a result, there are possibilities these days are not observed properly and their basic objectives are not achieved. The present environmental conditions as discussed in next section suggest that the initiatives taken so far are not sufficient.1

James Gustave Speth in his book Red Sky at Morning (Speth, 2004) and They Knew (Speth, 2021) has very well critically examined the success and failures of environmental initiatives taken so far. Given this backdrop, the Planet Day proposes the same along with an appropriate regulatory structure. Besides, it also proposes for making efforts towards creating awareness across different stakeholders on the importance of observing the Planet Day and ensuring effective participation of them in the process.

Pre-COVID environmental condition of the planet

Importantly, 7.6% of the emission should be reduced each year, and restricting increase in temperature at 1.5 °C remains a distant possibility (Emissions Gap Report, 2019). The Global Carbon Budget, 2019 reveals a 145% increase in the global carbon emission (from all the sources) from an annual average of 4.5 ± 0.7 GtC/yr. during 1960–1969 to 11.0 ± 0.8 GtC/yr. during 2010–2018. The total emissions during 1850–2018 is estimated at 645 ± 65 GtC (Table 1), with the maximum portion (445 ± 30 GtC) being emitted in a span of 60 years (1959–2018) only (Global Carbon Budget, 2019). The average annual CO2 emissions (Table 1) from fossil fuels and atmospheric CO2 (carbon sink) have increased considerably since the 1960s, with a marginal decrease in the 1990s (Global Carbon Budget, 2019).

The average annual CO2 flux from land use has remained almost constant since the 1960s, with a slight increase of 7.14% (Table 1). However, there is enormous pressure on the ocean and atmosphere for carbon sequestration. The Global Carbon Budget, 2019 (Table 1) reveals a 165 percent increase in the rate of carbon sequestration during 1960–2018 with

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1 While there may be several other factors leading to worsening of environmental conditions, one may argue that effective implementation of these voluntary initiatives would have helped in restricting such degradation. Nonetheless, effective implementation of these voluntary initiatives requires appropriate regulatory framework and guiding them in the right direction. The proposed Planet Day aims at bridging these gaps under the basic premise of a suitable regulatory framework and effective participation of different stakeholders.

2 Stands for Giga Ton of Carbon per year and 1 GtC = 3.664 GtCO2 (Global Carbon Budget, 2019) and 1 ppm = 2.124 GtC (Ballantyne et al., 2012).

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**Table 1** Share of CO₂ emission and sink in the world. [1 GtC = 3.364 CO₂]

| Source | Global Carbon Budget, 2019, Earth System Science Data (ESSD). P. no.1813. Table 8 |
|---|---|
| **Total emission GtC (1850–2018)** | **1960–69** (Annual Average GtC/yr.) | **2010–18** (Annual Average GtC/yr.) | **Emission for the year 2018 (GtC)** | **Increase from 1960–69 to 2010–18(%)** |
| E<sub>FF</sub> | 440 ± 20 | 3.0 ± 0.2 | 9.5 ± 0.5 | 10.0 ± 0.5 | ~ 217 |
| E<sub>LUC</sub> | 205 ± 60 | 1.4 ± 0.7 | 1.5 ± 0.7 | 1.5 ± 0.7 | ~ 7.14 |
| **Total emission (TE)** | **645 ± 65** | **4.5 ± 0.7** | **11.0 ± 0.8** | **11.5 ± 0.9** | ~ 145 |
| G<sub>ATM</sub> | 255 ± 5 | 1.8 ± 0.07 | 4.9 ± 0.02 | 5.1 ± 0.02 | 172 |
| S<sub>OCEAN</sub> | 160 ± 20 | 1.0 ± 0.6 | 2.5 ± 0.6 | 2.6 ± 0.6 | 150 |
| S<sub>LAND</sub> | 195 ± 40 | 1.3 ± 0.4 | 3.2 ± 0.6 | 3.5 ± 0.7 | 146 |
| **Total sink (TS)** | **610 ± 1σ** | **4.0 ± 1σ** | **10.6 ± 1σ** | **11.2 ± 1σ** | 165 |
| B<sub>IM</sub> (TE-TS) | 30 | 0.5 | 0.4 | 0.3 | - |

*Authors’ calculation; σ—Standard deviation
an individual increase of 172%, 150%, and 146% in atmosphere, ocean, and land. Further, emissions from fossil fuels (used in manufacturing units, transportation and electricity generation) have the highest share in atmospheric CO₂ levels (86.36%) and pollution (Global Carbon Budget, 2019). The increase of carbon causes global warming, climate change, soil salinization and desertification, ocean acidification³ (Lindsey, 2020). According to the NOAA’s Annual Greenhouse Gas Index, the combined heating effects of greenhouse gases have increased by 43% in 1990 (Dahlman, 2019).

However, global bio-capacity has increased by 26.38% only during 1961–2016 (Global Footprint Network, 2016) against increase in global population by 160 percent (World Bank, 2019). This has resulted in seven times more pressure on the planet, with a 191 percent increase in ecological footprint. Out of the 187 countries considered under the Global Footprint Network, only 52 countries are bio-capacity creditors⁴ (e.g., French Guiana, Surinam, Brazil, Congo, etc.). In contrast, the rests such as Singapore, India, China, USA, are bio-capacity debtors⁵ (Global Footprint Network, 2016).

The increase in bio-capacity vis-à-vis ecological footprint is insignificant, leading to an ecological deficit. The bio-capacity per person was 1.62 GHA⁶ in 2016 as compared to per capita ecological footprint of 2.75 GHA (Global Footprint Network, 2016). It indicates that each individual demanded resources 1.7 times more than the regenerating and absorbing capacity of the planet. As a result, the planet has shifted from being ecologically surplus (257.77 MGHA) in 1961 to the deficit state (− 833.97 MGHA) in 2016, and the Earth Overshoot Day has shifted from December 29 in 1970 to July 29 in 2019 (Past Earth Overshoot Days, 2020). Importantly, sustainability of the planet requires the ecological footprint per person to be equal to per capita global bio-capacity.

Thus, while the problem of increased pollution and air and water quality deterioration is well-recognized, the corrective measures undertaken appear to be inadequate. The UN has declared the decade 2021–2030 as the “Decade on Ecosystem Restoration” (Resolution Adopted by the General Assembly on 1 March 2019, 2019), which begins from The Environment Day (June 5, 2021) with a focus on ten voluntary strategies (United Nations, 2021b).⁷ Nevertheless, the success depends on its implementation, particularly in conserving over-exploited natural resources.

Environmental condition during the pandemic

The COVID-19 outbreak seems to have caused severe shocks and hence changes to the human life and brought the entire world to a standstill. Apart from spreading in more than 200 countries, it has affected around 15.5 million people worldwide, with the death toll being around 3.24 million (WHO, 2021). The disease has led to critical problems like livelihood loss, stagnant socio-economic activities, and limited mobility of people and resources.

Nevertheless, environmental degradation appears to be more alarming and also devastating in the long-run. While rapid developments in medical science and technology and government interventions could help in overcoming the crises of the pandemic to a large extent, the ecological losses continue despite several initiatives.

However, the COVID-19 led lockdown has also allowed the nature to heal. The Dhauladhar Range of Himachal Pradesh (India) could be visible for the first time from 213 km away in Jalandhar because of the pollution-free environment (Tiwari, 2020). Similarly, there was healing of the Ozone layer over Antarctica (Banerjee et al., 2020), which has significant implications due to implementation of the Montreal Protocol. Besides, clear water with visible fish inside and floating swans instead of gondolas were observed in Venice canals of Italy (Dockrat, 2020). It decreased pollution and atmospheric CO₂ and Nitrogen dioxide (NO₂) levels in China and Italy during

³ Ocean acidification reduces the capacity of aquatic organisms to extract calcium from the water to shape their shells and skeleton.
⁴ i.e., bio-capacity exceeds their ecological footprint.
⁵ i.e., ecological footprint exceeds their bio-capacity.
⁶ “A Global Hectare (GHA) is biologically productive hectare with world average biological productivity for a given year” (https://www.footprintnetwork.org/resources/glossary/). 1 MGHA = 10⁶ GHA.
⁷ The details on these strategies are available at United Nations (2021b).
January–February 2020 (NASA, 2020a, 2020b). Reduction in the concentration of harmful pollutants such as particulate matter (PM), carcinogenic formaldehyde, toxic sulphur dioxide were also visible (Schiermeier, 2020; Singh et al., 2020; Zheng et al., 2020). The concentration of SO2, NOx, and Volatile Organic Compounds (VOCs) emissions in cities like Beijing, Wuhan, Shanghai and Guangzhou decreased considerably (Chen et al., 2020; Ogen, 2020; Wang et al., 2020a, 2020b).

Air quality has improved due to decreased anthropogenic emissions by industries and transportation services, leading to decrease in PM concentrations. For example, emissions of primary PM2.5 and its concentrations in Beijing decreased by 20 and 10%, respectively during January 1–February 12 (Chen et al., 2020; Wang et al., 2020a, 2020b; Zheng et al., 2020). Similarly, sulphur dioxide (SO2), nitrous oxides (NOx), and Volatile Organic Compounds (VOCs) emissions decreased by 20, 50 and 30%, respectively. In contrast, concentrations of sulphate (SO4), nitrate (NO3), and secondary organic aerosol (SOA) decreased by around 20% (Wang et al., 2020a, 2020b). Similar cases are observed in Wuhan, Shanghai, and Guangzhou as well (Wang et al., 2020a, 2020b).

In India, the air quality of different cities, including Delhi, improved significantly during the lockdown (Mahato et al., 2020; Sarfraz et al., 2020; Singh et al., 2020). Concentrations of PM10 and PM2.5 witnessed the maximum reduction by 60 and 39%, respectively, vis-à-vis the last year (Mahato et al., 2020). The situation seems to have benefitted nature by reducing water pollution as well. The study by the Uttar Pradesh Pollution Control Board (UPPCB), India shows that the biological oxygen demand (BOD) in Ganga, just before the confluence of river Yamuna, has declined from 2.7 mg/l in March 2020 (just before the lockdown) to 2.2 mg/l in May 2020 along with decrease in total coliform from 3400 MPN9/100 ml (approx.) to 2200 MPN/100 ml (Table 2).

The COVID-19-led restrictions seem to have reduced the use of fossil fuels as well (Ambrose, 2020). According to the Carbon Brief, carbon emissions decreased by 18% during February–March in China due to less burning of coal (Stone, 2020). Further, the Earth Overshoot Day for 2020 was on August 22 vis-à-vis July 29 in 2019 (Earth Overshoot Days, 2020). Nevertheless, while these experiences are encouraging for ecological sustainability, they are likely to be temporary. Hence, the possibility of limiting economic growth to restrict ecological damages, as suggested by Meadows et al. (1972), should be explored. Based on the concept of “sustainable degrowth” (Fournier, 2008; Martínez-Alier et al., 2010), a regular holiday for nature can curb the negative externalities of anthropogenic activities (Hus- sen, 2004a). The existing studies deals mainly with environmental impact assessment (Behera, 2008, 2009; Behera et al., 2011) and sector-wise (construction, transport, industry) cost estimation methods for energy (International Energy Agency (IEA), 2020; Lin & Abudu, 2020), water (Sjöstrand et al., 2018) and carbon emissions (IEA, 2020a, 2020b; Zhang et al., 2020). However, the model of sustainable degrowth is not well explored in the literature. This research tries to make a contribution in this direction by designing an alternative pathway towards healing of the nature and hence greater ecological sustainability.

Table 2 Water quality of Ganga at Prayagraj (Upstream), Uttar Pradesh, India during COVID-19 Lockdown

|                     | January 2020 | March 2020 | May 2020 | June 2020 |
|---------------------|--------------|------------|----------|-----------|
| B.O.D (mg/l)        | 2.5          | 2.7        | 2.2      | 2.0       |
| Total coliform (MPN/100 ml) | 4600        | 3400       | 2200     | 2100      |

Source: River water quality, NWMP, Uttar Pradesh Pollution Control Board (UPPCB), 2020, India (http://www.uppcb.com/river_quality.htm)

8 The Most Probable Number (MPN) technique estimates microbial population sizes in liquid substrates (Haas, 1989; Wagner et al., 2012).

9 Model of sustainable de-growth focuses on slowing down ecological degradation without much limit to economic growth.
Methodology and data

Variables included

While fossil fuels (coal, liquid fuels, natural gas) contribute around 81.21% of total energy supplied worldwide (World Energy Balances, 2020c), their share in carbon emissions is around 86%, and hence largely responsible for global warming and climate change (Global Carbon Budget, 2019). Given that manufacturing, transportation, commercial and public services share around 66% in total energy consumption (World Energy Balances, 2020b), they are the primary agents of carbon emissions. The Global Shapers Annual Survey (2017) held climate change as a significant concern for three consecutive years. Besides, industries and transportation are highly water-intensive as well. Although the significant share of total water withdrawal globally is used in agriculture (70%), it is also largely used in industries (Ritchie & Roser, 2018a, 2018b) and transportation for the manufacturing process and cooling of machines (D’Acunha & Johnson, 2019; Su et al., 2018). Considering the importance of the nexus between carbon-energy-water and their linkage with different sectors (Su et al., 2018; Wang et al., 2020a, 2020b), following Hussen (2004b), this paper chooses energy, water and carbon emissions for benefit–cost analysis of the Planet Day.

The monetary values of these emissions (both globally and in India) are calculated in two broad economic sectors (Table 3) to get an approximate value of the benefits (as a part of overall benefits) from a day’s lockdown. Further, the costs are measured in terms of loss in gross value added (GVA) therein. Since the agriculture sector has a seasonal production process, no significant gains or losses through energy and water consumption is considered. Accordingly, no cumulative costs of carbon emissions could be estimated. Nevertheless, considering the importance of agriculture for food security, livelihoods and other aspects of socio-economic development, future studies should focus on estimating the costs of carbon emissions because of water and energy consumption in the sector. This is crucial for designing appropriate policies and intervention strategies towards sustainable and inclusive growth of agriculture sector.10

Table 3 Sector-wise classification of components included in benefit–cost analysis

| Benefit | Industrial sector | Service sector |
|---------|------------------|----------------|
| The market value of energy, water, and carbon emissions | Mining & quarrying, all manufacturing units (including cement, iron & steel, textile industries, food processing, electronic goods), electricity generating units, excluding water supply & other utility services | Construction |
| Cost | Transportation Commercial and public services (Hotels, Restaurants, Malls, Multiplexes, Supermarkets) |
| Annual value added by each sector |

Source: Handbook of statistics on the Indian Economy 2018–19, p. 7, Reserve Bank of India

Table 4 Formula used in calculation of benefits and costs

| Aspects | Formula | Terms |
|---------|---------|-------|
| Monetary value of energy | $E \times P_E$ | E-Amount of energy in ktoe, $P_E$-Per unit price of energy in USD |
| Monetary value of water | $W \times P_W$ | W-Amount of water consumption in billion litres, $P_W$-Per unit price of water in USD |
| Monetary value of carbon | $C \times P_C$ | C-Amount of carbon emitted in GtCO2, $P_C$-Per unit price of CO2 equivalent in USD |
| Planet Day share in a month | Annual value of energy/water/carbon emission ÷ 365 days | – |
| Planet Day share in a year | Share of a Planet Day × 12 days | – |

Source: Authors’ compilation

10 Table 7–1 of U.S Energy Information Administration, International Energy Outlook 2016 (Table C.1).
The steps followed in the benefits-cost analysis in the article is based on Hussen (2004a).

Calculations

A standard formula is used for the calculation of costs and benefits (Table 4). The costs of carbon, energy and water use are calculated based on their existing...

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| Socio-demographic aspect     | Classification | Frequency | Percentage |
|------------------------------|----------------|-----------|------------|
| Age                          | 15–30 years    | 136       | 73.5       |
|                              | 30–45 years    | 41        | 22.1       |
|                              | 45–60 years    | 5         | 2.7        |
|                              | Above 60       | 3         | 1.6        |
|                              | Total          | 185       | 100.0      |
| Gender composition           | Male           | 114       | 61.8       |
|                              | Female         | 71        | 38.2       |
|                              | Total          | 185       | 100.0      |
| Educational qualification    | Secondary      | 6         | 3.2        |
|                              | Graduate       | 47        | 25.4       |
|                              | Postgraduate   | 46        | 24.9       |
|                              | Research Scholar | 65     | 35.1       |
|                              | Professional   | 21        | 11.4       |
|                              | Total          | 185       | 100.0      |
| Place of residence           | Rural          | 48        | 25.9       |
|                              | Urban          | 112       | 60.5       |
|                              | Semi-Urban     | 25        | 13.6       |
|                              | Total          | 185       | 100.0      |
| Primary occupation           | Agriculture allied activities | 8 | 4.3 |
|                              | Private firm   | 29        | 15.7       |
|                              | Wage labour    | 1         | 0.5        |
|                              | Government Service | 39     | 21.1       |
|                              | Studying       | 39        | 55.1       |
|                              | Unemployed     | 102       | 3.3        |
|                              | Total          | 6         | 100.0      |

Source: Online primary survey for the time-period 23–30 April 2020

| Components                   | Data sources                                      |
|------------------------------|--------------------------------------------------|
| Energy                       | International Energy Agency (IEA)                 |
| Water                        | Our world in data                                 |
| Carbon emission              | Global Carbon Budget, 2019, CarbonBrief, IEA      |
| Energy pricing               | U.S Energy Information Administration (EIA)       |
| Water pricing                | NUMBEEO.com                                       |
| Carbon pricing               | World bank carbon pricing dashboard              |
| Past earth overshoot days    | Global Footprint Network                          |
| Global Bio-capacity          | Global Footprint Network                          |
| Ecological Footprint         | Global Footprint Network                          |

Source: Authors’ compilation. [*NC—Not Calculated]
consumption values in India and the world. The market prices of these resources are used to approximate the benefits and costs from one day’s lockdown each month. The annual value is divided by 365 days to calculate the share of *Planet Day* in a month (Table 4). A day’s value is multiplied by 12 to get the same for a year. Reduction in ecological deficit\(^1\) and extension of the Earth Overshoot Day\(^2\) for the year are discussed, along with comparing equivalence of carbon emission with the sequestration rate of forests (Table 12). The significant aspects and their corresponding data sources are summarised in Table 6.

**Data sources**

Both primary and secondary data are used. Secondary data (Table 6) are used primarily to calculate the market value of energy, water, and carbon emissions. A non-random convenience sample survey using an online questionnaire was carried out. A set of 24 closed-ended multiple-choice questions with possibility of multi-responses in a google form were disseminated through social media (Facebook, WhatsApp, Gmail) that covers the audiences in contact and cross references to capture larger masses from India enquiring different socio-demographic aspects of the respondents and their perceptions of the current ecological conditions and implications of the proposed Planet Day. However, the sample covers the respondents from India only and the paper considers this as one of its limitations. Nevertheless, based on the framework designed in this paper, future studies can aim at carrying out similar investigations in the context of other countries for fine-tuning and robustness of the proposed pathways. The survey was specifically conducted to know people’s perceptions about nature, their willingness to contribute to its conservation and the idea of Planet Day. A total of 185 responses were recorded during 23–30 April 2020 (Table 5). Broadly, a significant portion (73%) of the respondents belongs to the age group of 15–30 years with a larger share (61.4%) of males. Notably, around 61% of respondents live in urban areas, and 60% of them are postgraduate or research scholars. Hence, the respondents are well-informed about different aspects of nature, and their responses will reflect the same. The perception-based responses are summarised in Tables 16 and 17.\(^1\)

**Benefits and costs of planet day**

**Energy consumption**

While easy and adequate access to energy is crucial for economic development and human well-being (Ritchie & Roser, 2018a, 2018b), industries consume 28.4% of the world’s total energy consumption (World Energy Balances, 2020b).\(^1\) Out of total

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\(^{11}\) When ecological footprint exceeds biocapacity of the nature.

\(^{12}\) “The number of days of a year that Earth’s bio-capacity suffices to provide for humanity’s Ecological Footprint calculated using formula”, [(Planet’s Biocapacity/Humanity’s ecological footprint) x 365], (Earth Overshoot Days, 2020).

\(^{13}\) Here, education up to primary level is termed as illiteracy.

\(^{14}\) A UK based climate science and policy website—www.carbonbrief.org.
energy consumption (TEC)\(^{15}\) of 9,937,702 ktoe (Kilo tonne of oil equivalent) or 11.29 \times 10^{12}\ L of oil equivalent globally in 2018, industries, transport, commercial and public services consumed 6,538,832 ktoe or 65.80% or 7.4 \times 10^{12}\ L of oil equivalent (Table 7). Thus, Planet Day would reduce energy consumption from these sectors by 20.3 \times 10^{9}\ L of oil equivalent worth USD 8.12 billion per month and 243.6 \times 10^{9}\ L of oil equivalent worth USD 97.44 billion in a year (12 Planet days) (Table 8), based on per unit average price of crude oil for the year 2019 at the USD 0.40 per litres\(^{17}\) (EIA, 2020). Thus, the proposed Planet Day would save around 2.16% of global energy consumption per year, simultaneously reducing water demand and carbon emission.

### Water use

Water use has recorded continuous increase primarily because of increasing population, socio-economic development and change in consumption behaviour (UNESCO, 2019).\(^{16}\) It appears as the most exploited natural resource and, therefore, requires serious attention. Industry and power account for 19% of total water consumption (FAO, 2014).\(^{19}\) With the current rate of consumption, industrial use is anticipated to increase by 20–30% above the current level by 2050 (UNESCO, 2019), as water is heavily utilised in industrial production and related activities (International Energy Outlook, 2016).\(^{20}\)

Globally, the industrial sector used approximately 19% or 757,279.50 billion litres of total annual freshwater (TFW) withdrawals of 3,985,681,600,000 cubic metre \((\text{m}^3)\) or 3,985,681.6 billion litres\(^{21}\) in 2014 (Ritchie & Roser, 2018a, 2018b). Cumulative water usage data for transportation, commercial and public services are not available. However, the share of freshwater for municipal purposes is 11% or 438,424.98 billion litres (FAO, 2014). It is used to proxy the same. Thus, the proposed holiday would

### Table 8 Planet day share in energy consumption in India and the world

| TEC in the year 2018 | Share of I&S sector in a year | Planet days share in energy consumption by the I&S sector | Planet days share in energy cost (at price = USD 0.40 per litres) |
|---------------------|------------------------------|----------------------------------------------------------|---------------------------------------------------------------|
| World 9,937,702 ktoe| 6,538,832 ktoe, or, 11.29 \times 10^{12}\ L of oil equivalent | 7.4 \times 10^{12}\ L of oil equivalent/365 days | (0.0203 \times 10^{12}\ L) \times (USD 0.40/l) |
| India 606,581 ktoe | 335,881 ktoe, or, 0.689 \times 10^{12}\ L of oil equivalent | 0.38 \times 10^{12}\ L of oil equivalent/365 days | (0.00104 \times 10^{12}\ L) \times (USD 0.40/l) |

Source: Authors’ calculation based on data in Table 7

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15 Including energy from coal, crude oil, natural gas, nuclear, hydro, renewables sources, electricity, heat (IEA).
16 1 ktoe = 7142.857 boe; 1 boe = 158.987\ L of oil equivalent; Hence, 1 ktoe = 1,135,621.40586\ L = 11.36 \times 10^{5}\ L.
17 Cost of Brent crude oil in 2019 is averaged at USD 64 per barrel (EIA, 2020). Hence, cost of one litres of crude oil will be approx. USD 0.40.
18 1\ m^3 = 1000\ Litres.
19 USD 1 = INR 72.575 (March 26, 2021; https://themoneyconverter.com/USD/INR).
20 Prices of water by country (0.33\ L per bottle) (at restaurants). The details are available at https://www.numbeo.com/cost-of-living/prices_by_country.jsp?displayCurrency=USD&itemId=7.
21 1\ m^3 = 1000\ Litres.
reduce freshwater use by 3275.90 billion litres in a month and 39,310.8 billion litres in a year (Table 9).

However, the costs of water used in industries are often undervalued. Here, the cost of industrial freshwater is calculated based on the market value of drinking water. The market value of packaged drinking water in 102 countries is averaged to get the per litres price at USD 2.79 (NUMBEO, 2020). The monetary value of the drinking water supply gives a rough estimate of water used in industries. Thus, Planet Day saves 3275.90 billion litres of water per day and 39,310.8 billion litres annually (around 0.99 percent of annual global water consumption) valued at USD 9,139.76 billion and USD 109,677.13, respectively (Table 9).

Table 9 Planet day share in water consumption in India and the world

| Total annual freshwater withdrawals (TFW) in 2014 | Share of I&S sector | Planet day consumption | Planet day cost of water consumption by I&S (USD2.79/litres for world or USD0.6/litres for India) |
|--------------------------------------------------|----------------------|------------------------|------------------------------------------------------------------------------------------------|
| World 3,985,681,600,000 cubic metres (m³) Or, 3,985,681.6 billion litres | 30% of TFW Or, 1,195,704.48 billion litres | 1,195,704.48 billion litres/365 days | USD 2.79 × 3275.90 billion litres |
| | Or, 3,985,681.6 billion litres | 3,275.90 billion litres in a month | USD 9139.76 billion in a day or in a month |
| | Or, 1,195,704.48 billion litres | 39,310.8 billion litres in a year | USD 109,677.13 billion in a year |
| India 813 billion cubic meters (BCM) Or, 813,000 billion litres (in 2010) | 7.87% of annual water requirement Or, 64,000 billion litres | 64,000/365 days 32.876 billion litres × USD 0.60/litres | USD 105.20 billion in a day or in a month |
| | Or, 64,000 billion litres | 175.34 billion litres in a month | USD 1262.4 billion in a year |
| | Or, 64,000 billion litres | 2104 billion litres in a year | |

Source: Authors’ calculation based on water consumption data available of (Ritchie & Roser, 2018a, 2018b)

Table 10 Sector-wise carbon emission in India and the world 2018

| Sectors | Emissions million tonne CO2 |
|---------|-----------------------------|
|         | World | Percent of T.E. in world | India | Percent of T.E. in India |
| Electricity and heat producers | 13,978 | 41.71 | 1183 | 51.26 |
| Industry | 7771 | 23.19 | 630 | 27.30 |
| Transport | 8258 | 24.64 | 305 | 13.21 |
| Residential | 2033 | 06.06 | 89 | 03.85 |
| Commercial and public services | 850 | 02.53 | 30 | 01.30 |
| Agriculture | 428 | 01.27 | 34 | 01.47 |
| Final consumption not elsewhere specified | 177 | 00.53 | 37 | 01.60 |
| Fishing | 19 | 0.057 | – | – |
| Total (MtCO2) | 33,514 | 100.00 | 2308 | 100.00 |

Source: International Energy Agency (IEA, 2020a, 2020b)

Carbon emission

Global carbon emission from fossil fuels has increased manifolds since the 1960s. Emissions from road, rail, air, and marine transportation accounted for around 24.64 percent of global emissions in 2018 (Table 10). While it was 35.38 gigatons of CO₂ (GtCO₂) in 2016, it increased to 36.81 GtCO₂ in 2019, with a more than four percent increase in just four years (Global Carbon Budget, 2019). According to IEA, transportation, industries, commercial and public services contribute to around 66 percent of total energy consumption and more than 50.36 percent of total CO₂ emissions (T.E) (Table 10). Their share was 33,514 million Tonne of CO₂ (MtCO₂) or 33,514×10⁶ tonnes CO₂ in 2018 (Table 11). Carbon
related financial disclosures are sprouting, and carbon pricing is used increasingly as a metric to integrate with the climate-related risks ("State and Trends of Carbon Pricing," 2014). More specifically, carbon pricing for emission of greenhouse gases (GHG) includes emission trading system (ETS), carbon taxes, offset mechanisms, and result-based climate finance (RBCF) (State and Trends of Carbon Pricing, 2014). It is used as a mechanism to lessen climate-related financial risks and explore new avenues for a transition toward a low-carbon economy. As per the World Bank, 46 countries have taken initiatives for the carbon tax and ETS system in 2019, and other countries may also follow the same. Valuation of daily emission using the global average carbon prices of USD 20.7745 per tonne of CO2e (World Bank, 2019) amounts to around the USD 0.961 billion for a Planet Day with the reduction of around 46.24 × 10^6 tCO2 and the USD11.527 billion (554.88 × 10^6 tCO2) per annum (Table 11). Thus, the proposed Planet Day would reduce carbon emissions up to 554.88 × 10^6 tCO2 in a year globally, which is around 1.66 percent of the total emission in 2019 and would mitigate climate change with a positive impact on human health and the environment.

**Tree equivalence of a day’s emission**

Ocean plays a crucial role in carbon sequestrations and ocean equivalence of a day’s emission could be an alternative of measuring the same.\(^{22}\) However, the present paper considers only the tree capacity of carbon sequestration due to its widespread application in the literature (Behera et al., 2022; Rytter & Rytter, 2020). The tree equivalence for carbon emission value indicates the number of trees required to sequester the same in one year. Carbon sequestration in the forest

\(^{22}\) \(1 \text{MtCO}_2 = 10^6 \text{tCO}_2.\)
depends on the species and age of trees, along with wood density and growth situation (Clark, 1986). Maximum sequestration occurs at the early stages of growth of a tree (i.e., between 20 and 50 years) (Toochi, 2018). Based on its height, weight, diameter and age, the average sequestration rate of a tropical tree is calculated as 50 pounds (22.675 kg) per year (Toochi, 2018). Given that around 700 trees are accommodated in one acre of forest (Toochi, 2018), sequestering *Planet Day* carbon emission from industries and services requires around $2.04 \times 10^9$ trees or $2.9 \times 10^6$ acres (i.e., around $1.17 \times 10^6$ hectares)\(^\text{23}\) of forest per year (Table 12) out of the total forest area of $4060 \times 10^6$ hectares in the world (FAO & UNEP, 2020). The tree equivalence and monetary values of carbon emission for *Planet Day* is shown in Fig. 1.

The diagram (Fig. 2) shows that, of the total likely benefits from the proposed *Planet Day*, the monetary benefits from energy, freshwater, and carbon emissions can be filtered out. This gives an overview of how beneficial the suggested day can be. Thus, the

\[^{23}\text{1 acre} = \sim 0.4047 \text{ hectares.}\]
Fig. 2  The diagram shows the total likely benefits from the proposed Planet Day. Source: Designed by the authors

Table 14  Possible losses incurred due to Planet Day in India and the world

|                          | Value-added (current USD) of industry (including construction) in 2019 | Planet day shares in loss from closing down of industries and transportation | Total loss for Planet Day (USD) |
|--------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------|
| World                    | USD 23.235 trillion, Or, 23,235 billion                               | *Industries* USD 23.235 trillion/365 days Or, USD 0.0636 trillion, Or, USD 63.6 billion  |
|                          | *Transportation, commercial and public services* 130.3% of total energy consumption by industries 130.3% × USD 63.6 billion USD 82.87 billion |                                                                              | USD 63.6 billion + USD 82.87 billion in a day USD 146.47 billion in a day or in a month USD 1757.64 billion in a year |
| India                    | USD 715.364 billion                                                  | *Industries* USD 715.364 billion/365 days Or, USD 1.96 billion  |
|                          | *Transportation, commercial and public services* 63% of total energy consumption by industries 63% × USD 1.96 billion Or, USD 1.23 billion |                                                                              | USD 1.96 billion + USD 1.23 billion in a day USD 3.19 billion in a day or in a month USD 38.28 billion in a year |

Source: Industry, value added (current USD) (World bank National Account Data, 2019c)

diagram shows the total savings by the Planet Day with reference to Table 15.

Nevertheless, apprehensions of economic losses because of the proposed Planet Day are very likely primarily for shutting down industrial units, transportation, and other commercial activities. The gross value added (GVA) from these sectors can proxy for such losses. Given that the value of the output of the
industrial sector (including construction) amounts to USD 23.235 trillion annually \(^{24}\) (World Bank National Account Data, 2019a), the cost would be around USD 63.6 billion for *Planet Day* in a month and USD 763.2 billion annually (Table 14). Although data on value-added data in transportation, commercial and public services are not available, energy used therein is 130.3 percent to industries (Table 7), and the losses can be approximated accordingly. Hence, the estimated economic losses of *Planet Day* would be around USD 146.47 billion per month and USD 1757.64 billion per year (Table 14), and it is not significant vis-à-vis total ecological and other benefits.

### Experiences in Indian context

The discussions so far provide a global overview of benefits and costs from the proposed Planet Day. However, these estimates may vary across nations and even in different regions, depending on their

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\(^{24}\) Based on industry (including construction) value added, at current 2010 USD, World Bank National accounts data, and OECD National Accounts data files. Accessed on 8 September 2020.
share in energy-water consumption and carbon emissions. Accordingly, this paper focuses on India as a case study. In addition to secondary data, insights from a primary online survey are used to understand people’s perceptions in this regard.

Energy consumption

The annual TEC in India was 606,581 ktoe or $0.689 \times 10^{12}$ L of oil equivalent (World Energy Balances, 2020a) in the year 2018. The annual share of the I&S sector is 335,881 ktoe or $0.38 \times 10^{12}$ L of oil equivalent (55.37 percent of TEC). Implementation of Planet Day in India would reduce around $0.00104 \times 10^{12}$ L of oil equivalent of energy worth USD 0.416 billion (INR 301.9 crore) per day and $0.0125 \times 10^{12}$ L worth USD 5.0 billion (INR 362.88 crore) annually based on the average world price of crude oil of USD 0.40/litres (Table 8). Thus, Planet Day in India would save around 1.81% of TEC annually.

Water use

India houses more than 17% of the world population. Being an agriculture driven economy, only 1.476% of water was used in industries in 2010 (Table 13). Since data for transportation, commercial and public services are not available, the paper uses other services for the same. The share of industries and others in the annual water consumption is 64,000 billion litres (7.87%). Hence, the implementation of Planet Day in India would conserve 175.34 billion litres (Table 9) of freshwater worth USD 105.20 billion in a day (at the rate of USD 0.60 per litres) and USD 1262.4 billion (2104 billion litres) annually. Notably, the calculation is done using the latest available data for the year 2010 (Table 13). One may, therefore, expect a higher value both in amount and monetary value.

Carbon emissions

India is the third-largest emitter of CO₂ globally and experiences severe consequences of pollution and climate change, particularly in the cities like Delhi and Mumbai. The impact in the form of melting of glaciers of the northern Himalayas, frequent flood and droughts in different parts of the country, over-exploitation of groundwater resources, sea-level rise and intrusion of saltwater in coastal areas have adverse implications for agriculture and groundwater quality along with the economy and society at large (World Bank, 2013). According to the IEA (2018), annual CO₂ emissions in India was 2308 MtCO₂ or $2.308 \times 10^6$ tCO₂ in 2018, with the share of industries and services being $965 \times 10^6$ tCO₂ (Table 10). The Planet Day share of these sectors is $2.64 \times 10^6$ tCO₂ which costs around USD 0.0549 billion in a
month and USD 0.658 billion a year for the emission of $31.68 \times 10^9$ tCO$_2$ (Table 11). Thus, around 1.37% of total carbon emission can be reduced per year only from the lockdown in industries, transport and services.

However, the Planet Day would result in losses for industries and services as well. The GVA for industries (including construction) is USD 715.364 billion (World bank National Account Data, 2019c), and losses would amount to around USD 1.96 billion for industries for a day and USD 23.52 billion annually (Table 14). Since data on value-added in transportation is not available, the tentative losses are calculated here (Table 14). Energy used in transportation, commercial and public services in India is 63% of that consumed by industries (Table 7). Accordingly, the paper assumes the share of the losses (Table 14). The overall losses due to Planet Day would amount around USD 3.19 billion per month and USD 38.28 billion per year.

The approximate values presented in Table 15 signifies that the economic losses are not significant as compared to the monetary benefits of ecological resources. The net benefit from a day’s shutdown is relatively high and amounts to 10.26 percent of the World GDP. The same amounts to 3.573% of India’s GDP. Moreover, water is often under-priced as it is not always paid or underpaid for its use in various activities. The monetary values cannot be ignored considering the scarcity the world faces right now and the rate of its depletion (Ritchie & Roser, 2018a, 2018b; Sjöstrand et al., 2018; Spitzer, 1971).

### People’s perceptions about planet day

As mentioned above, to understand people’s perceptions about Planet Day, a non-random convenience sample online survey was carried out. The respondents belong to different ages, gender, profession, and socio-economic background. It is expected that the diverse composition of the respondents would cover perceptions from different sections of society. The socio-demographic status of the respondents is presented in Table 16. People from all age groups favour giving refreshment time to the planet through Planet Day, especially the youths. More than 90 percent of the respondents are well educated and hence assumed as well-informed and aware about environmental issues. Moreover, others are also expected to be aware through electronic, print and social media. Thus, the responses are likely to be well-informed and accurate reflections of the facts/views.

Implementation of Planet Day, notably in urban areas, would be easier because more than 60% of the respondents living in urban areas strongly support the idea of Planet Day. The respondents largely perceive that the steps taken so far for conservation of air, water, soil, and biodiversity are satisfactory only up to a certain extent (Table 16), causing the need for further initiatives in this regard (Fig. 1).

The respondents, in general, prefer to stay at home and close the factories and transportation on the Planet Day. However, some favour complete lockdown, including the closure of food stalls, medicines, and grocery shops as well. Further, being at home, the respondents would prefer to be engaged in plantation (planting trees) and kitchen garden-related activities, cleaning, studying, spending time with family and friends, and carrying out other works like career planning, meditation, building awareness among people for education, environment, and population (Table 17). More than 63 percent of respondents from urban and rural areas each and 68 percent from semi-rural areas preferred planting trees and kitchen gardening related works. It shows the willingness of people to work for nature and their readiness to use this healing time in some productive work for the sustainability of nature. More than 80 percent of respondents believe that human beings must take more robust steps to ensure sustainability of the planet. The respondents across living areas (urban, rural, or semi-rural) show a willingness to perform duty toward the planet by observing Planet Day as part of their culture. Most of them (97 percent) favour at least a day’s shutdown.

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25 GDP for India (2019) = USD2.869 trillion or USD 2,869 billion.

GDP for the World (2019) = USD 87.735 trillion or USD 87,735 billion (World bank National Account Data, 2019a).

26 Here, it is assumed that well-educated respondent is more informed as they have greater access to information on the changing circumstances, technologies, policies, etc. However, it is also possible that educated people are not necessarily informed about the dynamics of the earth system.
The implementation and success of any initiative depend on how people perceive potential benefits. Their awareness level and understanding of the problems influence such perceptions considerably. The primary survey helped immensely in this regard. It also provided important insights for fine-tuning the initiative and implementing the same in the right direction.

Nevertheless, even if the respondents support the idea of planet day it may not necessarily be implemented. This is so because, the implementation of any such initiative would require necessary support from different government agencies, regulators, and active participation of different stakeholders in the process. In this connection, educated people can play a crucial role by creating awareness on environmental concerns and motivating people towards their participation in observance of the planet day. In addition, the NGOs and other community-based organisations are also has very important role to play particularly, in mobilising towards observance of the planet day (Fig. 2).

**Fig. 3** Schematic presentation of the proposed Planet Day. Source: Designed by Authors

**Proposed framework**

While the use of natural resources cannot be avoided during growth, emphasis should be given on their judicious/rational application and appropriate management and conservation to facilitate sustainable development. It requires efficient governance and other institutional arrangements. The proposed Planet Day would be one such institutional arrangement that aims to restrict the exploitation of natural resources and ecological degradation. Since it proposes a complete nation-wide shutdown of all economic activities, there should be a specific day each month throughout a particular nation. However, the same can vary across the countries depending on local laws, practices and circumstances. For example, there is a holiday on the second Saturday of each month in banks and state government jobs in India, while a few other sectors have holidays on both Saturday and Sunday each week. Hence, the second Friday of each month can be dedicated to Planet Day to be combined with weekends. However, it will depend on implementing agencies after a further detailed analysis of country-specific dynamics.
There should be collective actions of individuals (residents) and the government (national and local governing institutions) and private institutions (business and other enterprises). The individuals can contribute by stopping the activities such as unnecessary transportation, shopping and tourism on the proposed day (Table 17). The government and private institutions need to stop their business activities, mainly related to energy and water-intensive manufacturing and transportation. While services such as hotels, restaurants, malls, and multiplexes need to be closed on the day, IT and BPO companies can continue their work in 'work from home' mode. It would reduce energy usage and greenhouse gas emissions by avoiding employees' transportation without hampering their output. The proper implementation of a strict shutdown on the day needs statutory supports and regulations by the government.

The agriculture sector, though has a season bound production process (no significant benefit or loss can be estimated), can avoid use of tractors, threshers, etc., on that day, especially during sowing and harvesting. Besides, the farmers can also contribute as an individual (Fig. 3). They can engage themselves in social and ecological activities such as planting trees, kitchen garden activities, creating awareness, cleaning rivers and surroundings (Table 17). Further, periodic awareness and training programmes are necessary, particularly in areas of low literacy. Thus, with collective efforts, Planet Day would save energy and water, and reduce greenhouse gas emissions, including pressure on nature. It will also promote social cohesion by allowing people to spend more time with family and neighbours. The schematic presentation of Planet Day is given in Fig. 3.

Features of the planet day

i. A nation-wide one-day lockdown of activities each month

ii. A collective effort of all

iii. Obligatory through statutory support and regulations

iv. Compulsory engagement of authorized people in social and ecological activities

v. Periodic nudging of people through awareness and training programmes

The major differences between Planet Day and the existing environmental days and campaigns lie in their regulatory mechanisms and goals. For example, unlike others that are mainly voluntary, Planet Day is proposed to be statutorily regulated and obligatory. Similarly, the main goal of Planet Day is to make people liable and take actions to conserve energy and water resources and reduce carbon emissions together with creating awareness. In contrast, other initiatives focus on raising awareness to protect and conserve nature.

Thus, the respondents recognize the significance and approve Planet Day. However, this can be analyzed based on two principles of Welfare Economics. The first principle says that a project can be accepted if no member of the society becomes worse off, and at least one becomes better off. The second principle suggests compensating the losers by the gainers from the project (Hussen, 2004b). Though everyone would gain with Planet Day in the long run, small businesses and people from low-income groups, especially the daily wage workers seem to be vulnerable. This is indeed a very critical and challenging issue as there are trade-offs amongst people, planet and profit. Nevertheless, addressing the problem of environmental degradation is inevitable for sustainability and inclusiveness of the development process. Hence, in order to incentivize the small businesses and daily wage workers enough towards halting production of goods and services for a day in every month, a consolidated fund can be generated by the government with larger contribution by the IT firms and a part of the losses of small businesses can be compensated through cross-subsidization. In addition, some of the taxes can be exempted on observance of the Planet Day. Nevertheless, the basic notion of this paper is only an initial ideation of an alternative pathway towards suitable development, and thorough investigation and analysis are required for its fine-tuning and robustness. The local administration should play active role to ensure transparency, inclusiveness, efficiency, and people’s

27 One may perceive that people may have two jobs so that if one is not working, they may use the time for other jobs and accordingly this may undermine the impact of Planet Day. The paper focuses on all the and, even if one has more than one jobs, the person should be restricted from doing the same unless it is an essential service.
confidence. In addition, some relaxation may be given to workers engaged in essential services. However, for successful implementation, the initiative should be demand-driven and have willingness and active participation of different stakeholders.

Although the idea of the one-day complete shutdown may not create any serious problem as such, addressing a few potential issues require proper execution mechanisms. For example-

i. The business personnel and the industrialists who would pay the cost of Planet Day can be compensated (not compulsorily) by extending working hours by half an hour each day during the working days. It would also save the day’s energy consumption for starting the machines, transportation of staff, water used for cooling and running machines, and emissions. The resources saved and the pollution avoided are the gains from Planet Day.

ii. A medical emergency, milk, vegetables, grocery, or daily use items should be barred from the restrictions.

iii. Given that Planet Day is meant for ecological benefits, complete closing down of manufacturing and transportation activities would be imperative. However, services like IT and BPO may function in the 'work from home (WFH)' mode to reduce economic losses. Since agriculture is season bound, the shutdown may not cause any severe constraint.

iv. The local administration should take initiatives toward water and soil conservation, plantation, gardening, and beautification of the locality with voluntary participation of the nearby community. It would also remove their boredom on that day, facilitate the conservation of natural resources, and increase greenery in the area. Emphasis should also be given to raising environmental awareness through various initiatives.

v. The local level institutions and community-based organizations have an essential role in the success of the initiative. An appropriate incentive/reward mechanism can encourage people to participate actively. Documentation, dissemination, and replication of the best practices followed and successes achieved would also be crucial.

Conclusions

In the context of rapid depletion of natural resources and consequent ecological degradation, this paper highlights the potential implications of the proposed strategy of a day’s lockdown each month as Planet Day through cost–benefit analysis and people’s perceptions. It is found that, along with monetary and ecological benefits, other indirect benefits such as reducing health-related expenses and social costs are imperative. However, the paper does not estimate any model. Instead, it addresses the research objective through descriptive statistics and computation of benefits and costs using standard formulas. Hence, no discussion on model and technique is added in the paper. Nevertheless, robust designing of any framework requires understanding of the underlying dynamics and the causal relationships using systematic data and robust techniques. Future studies should focus on these aspects. Further, based on the framework designed in this paper, future studies should also aim at carrying out similar investigations in the context of other countries for fine-tuning and robustness of the proposed pathways. All these are important areas for further research, and the same are recognised and highlighted in the revised version of the paper.

While economic and ecological implications need further research, the success requires appropriate incentives to compensate for economic losses. Furthermore, the three Sanskrit terminologies—Vikriti (Deformation), Sanskriti (Culture) and Prakriti (Nature), which are aligned with the country’s ethos and culture, can motivate people. While Vikriti means an imbalance in natural elemental quality or deformation (Harshananda, 2008), Prakriti indicates a unique mix of biological humour in a body or environment (Harshananda, 2008) and Sanskriti stands for imbibing refined matter or condition (Harshananda, 2008). Thus, they recognize the deformation done (Vikriti), imbibe protecting and respecting ecosystem (Prakriti) and make it a social culture of devoting a day to the planet (Sanskriti). Finally, there is a need for appropriate institutions and other supports to address various aspects of livelihoods and essential services along with an emphasis on local administration and community-based organizations.
The authors whose names are listed immediately below declare that:

1. They have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper in any form (such as honoraria; educational grants; participation in speakers’ bureaus; membership, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements) in the subject matter or materials discussed in this manuscript.

2. No experiment with human or animal is involved.

3. The revised manuscript is ‘Turnitin Checked’ with 3% similarity level.

It is hereby declared that the article is purely an idea of the authors with no competing interest.

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