

**Meeting the
Climate Challenge**

Policy Brief No. 6

Where the Green Future Begins

Our common future will be shaped by the success of Indonesia's and India's vigorous efforts to pursue climate resilience and energy transition—through inclusive societal development that leaves no one behind.

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Contents

Legal Disclaimer	03
A Note from the Digital Economist	04
Executive Summary	05
Setting the Stage	08
An Agenda for the Indonesian and Indian leadership of G20	08
Harnessing the Power of the Digital World to Climate Adaptation, Mitigation, Resilience, and Energy Transition	09
The Ties that Bind India and Indonesia	13
Indonesia's and India's pursuit of Social Cohesion	13
India's Progress towards a Net Zero Carbon Future	17
The Vital Importance of Nusantara, Indonesia's New National Capital	19
Recommendations	19
Authors, Contributors	20
Editor, Researchers	21
Works Cited	22
About The Digital Economist	24



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A note from The Digital Economist

The Digital Economist works with the priorities for addressing the planetary climate crisis set by the Conference of Parties (COP) serving as the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), the Glasgow Climate Pact reached at COP26, and the United Nations Sustainable Development Goals (Agenda 2030).

In Where the Green Future Begins, the fifth chapter of our book Meeting the Climate Challenge, we take a deeper look at the energy transition and climate resilience agendas of two huge democracies, Indonesia and India. Each country's pursuit of inclusive societal development as a foundation of climate adaptation and mitigation is a remarkable ambition.

If they succeed, the examples of these two Asian giants will be of paramount importance in convening scalable global efforts to limit planetary warming to 1.5 degrees above pre-industrial levels.

Each of our chapters is meant as a catalyst to provoke and stimulate conversation, dialogue, sharing of ideas, mutual engagement and, above all, to advance the momentum of inclusive climate resilience that leaves none behind.

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Executive Summary

By the end of 2024, we will know whether there is any hope of escaping climate catastrophe. A terrifying foretaste of the future unfolded with fury on the Indian subcontinent in August and September of 2022, as unprecedented flooding washed away tens of millions of livelihoods in the arid and poverty-stricken reaches of Pakistan.

A civil-society response to the climate calamity needs to be shaped within and among the most vulnerable societies and populations. The Indian subcontinent and the great Indonesian archipelago spanning the equator are home to a quarter of humankind. Their future becomes the harbinger of our collective future.

Social license—consent and consensus from a significant majority of citizens—is essential to the success of any policies addressing the climate challenge.

Our last best hope for a sustainable future lies with Indonesia and India, whose leadership of the [G20 group of nations](#) will shape adaptation, mitigation and inclusive climate resilience—with the participation and leadership of people from all walks of life.

Indonesia and India are among the world's three most populous democracies, with complex and diverse populations. Both are committed to striving for unity and common purpose from many streams of language, culture and tradition. They offer a valuable precedent for a world seeking ways to converge international efforts in climate adaptation, mitigation and resilience.

The presidency of the G20 over the next two years—India will succeed Indonesia—gives each country a singular opportunity to shape the future of inclusive climate resilience.

Comprising all member states of the European Union and 19 nations representing major economies, the G20 may be a better vehicle for comprehensive and coordinated global action on the climate emergency than the [Conference of the Parties \(COP\)](#) to the [United Nations Framework Convention on Climate Change \(UNFCCC\)](#). It would, in effect, be a means of addressing and delivering the UNFCCC goals as an act of coordinated leadership.

Yet, as we have seen in the COP process, the adopted measures are not nearly enough to cope with the climate crisis.

One may well ask how Indonesia and India, which are committed in the short and medium term to high-carbon energy production and consumption, can lead a planet-saving transformation and transition.

The answer lies in taking a broader view. [Each is pursuing an “all of the above” energy strategy](#), which includes the development of reliable

renewables, until there is a robust [and sustainable transition](#) to a low-carbon then a no-carbon future.

A key component in this is landscape management and sustainable agriculture, particularly efforts to maintain and expand carbon-absorbing forest and agricultural canopy.

Sustainable agriculture, food system resilience and sustainable forest practices will be the focal points of the next two Conference of the Parties to the United Nations Framework Convention on Climate Change, to be convened in the MENA (Middle East and North Africa) region.

From the official [UN response to combat desertification](#) to the [UN-REDD programme](#) and the [agro-forestry focus](#) of the Food and Agriculture Organization to the [food security-related SDGs](#); from [provocative research on drylands](#) to the Intergovernmental Panel on Climate Change (IPCC) [work on land use](#) as a key part of climate mitigation and adaptation, Indonesia and India can converge many international efforts to address this pivotal aspect of the climate crisis.

These initiatives have common themes and common areas, where cooperation and co-creation can amplify current initiatives, support new ones and achieve the most impact. The Digital Economist believes these efforts could restore a global carbon sink encircling the planet, between the Tropics of Cancer and Capricorn.

The idea of sustaining and nurturing this “agro-food global tropical green belt” north and south of the Equator could be a compelling vision around which to converge and amplify the many global efforts. These efforts can be addressed and convened in Indonesia, which is spread across an archipelago of 17,000 islands, and [faces most of the challenges associated with establishing sustainable agriculture and sound forest stewardship](#).

Initiatives such as [Ant Forest](#) and the [trillion tree campaign](#), innovation programs like the European Union's [EIT Food](#) and funding mechanisms like the [bio-carbon fund](#) for sustainable forestry and the World Food Programme's [climate action support](#) for the most marginalized are also core to advancing the agenda with innovation and action.

The key element in success is citizen-led climate resilience. This is where the planetary importance of Indonesia and India becomes evident.

Each has built democracy within a sprawling, sometimes chaotic, agglomeration of competing interests and agendas. This in itself is a momentous achievement, as it provides models for finding common purpose and common ground in an increasingly fractious and divided world. The Indian and Indonesian efforts to convene and coalesce diversity offer a template for how the nations of the world could work together in meeting the triple planetary crisis of climate emergency, pollution and biodiversity loss.

Each government [is swayed by public protest](#) and is sensitive to [public opinion, especially among ordinary citizens](#). While democracy may make it more difficult to secure social license and public support, the democratic context itself creates a level of public engagement that is more challenging to achieve in top-down societies with authoritarian or tyrannical power structures.

Most promisingly, Indonesia and India have a shared history and culture, interrupted by colonial rule, which is [regaining its former vigor in the post-colonial world](#).

The joint leadership of India and Indonesia has become even more pivotal, given the [divisions in the G20 that have emerged during Russia's invasion of Ukraine and the ongoing war](#). G20 members that also belong to the North Atlantic Treaty Organization (NATO) have a markedly different approach to the north European conflict than do major G20 nations including China, India, Brazil, South Africa and Indonesia. The disruption in energy markets and supply chains arising from the Ukraine war is [reviving and accelerating fossil fuel use](#)—to the point that Germany, which has become particularly dependent on Russian natural gas, may need to return to coal-burning electricity generation. The country is also considering extending the operation of nuclear power plants, which were scheduled to shut now in the near future after the Fukushima meltdown.

Even as fossil-fuel energy reached record prices, [India's Prime Minister Narendra Modi reaffirmed two firm goals](#): that India will harvest 50 percent of its energy needs from renewables by 2030, and to do so, it will install 500 gigawatts of renewable energy by 2030. This is a bold vision, as the near horizon is characterized by the headlong rush to burn fossil fuel energy to drive the global economy. As Prime Minister Modi noted:

"Whatever targets India has set for itself, I do not see them as a challenge, but as an opportunity. ... Sustainable growth is possible only through sustainable energy sources."

At the same time, [Indonesia's President Joko Widowo reaffirmed a bold vision](#) to build an entirely new national capital (Ibu Kota Negara or IKN) for Indonesia in the tropical forest of Kalimantan, with construction to begin in August 2022. [Called Nusantara \(Indonesian for archipelago\)](#), the new capital will be integrated into the forest itself and will serve as a model of sustainability echoing indigenous cultural practices, where humans lived in harmony with nature. Most remarkably, the president has emphasized that [Nusantara is intentionally designed to achieve economic and social equity](#).

Within this context, The Digital Economist believes India and Indonesia are well placed to lead the G20 in establishing inclusive climate resilience. With agricultural traditions dating from the earliest human experience, each nation understands that [citizens' bond with the land](#) is an essential part of social cohesion and inclusive societal development.

These action items should include:

Citizen and community participation, with a particular focus on those at risk of marginalization, to enable them to be the architects of their own future and participate actively in reforestation and forest management.

Sound natural capital policy and practice drawing on key success case studies on successful natural capital policy, sustainable agro-forest practices and [mangrove restoration](#).

Documenting ample evidence of reforestation and sound forest stewardship as a means of mitigating climate change by enlarging the carbon sink, restoring natural habitat, reviving damaged ecosystems and the purposeful nurturing of biodiversity.

Incorporating indigenous knowledge, traditions and skills that kept forests and humans in symbiotic engagement until the industrial revolution.

Leveraging and integrating the full range of digital solutions, emerging technologies and distributed ledger technology to amplify and scale impact, including the [Climate Chain Coalition](#) focused on climate actions for mitigation and adaptation, also encompassing finance aspects. The Digital Economist believes that our common future will be shaped by the progress of Indonesia and India's efforts to pursue climate resilience and energy transition through inclusive societal development.

We welcome India's and Indonesia's commitment to human-centered societal development, their bold measures to pursue social and economic equity and their commitment to better human and planetary outcomes.

Accordingly, we offer the following recommendations:

- Indonesia and India should continue to develop coordinated, citizen-centered and scalable policies for climate mitigation, adaptation and resilience during their presidencies of the G20.
- The purpose of this collaboration should be to ensure broad citizen participation in building climate resilience. This includes forest and landscape management, sustainable agriculture and leadership in restoring a tropical carbon sink that could eventually encircle the globe.
- These collaborative policies should be expressly designed to achieve better human and planetary outcomes.
- Best practices and lessons learned from the Indian and Indonesian collaboration should be used as scalable and adaptable models across the G20.
- The efforts of Indonesia and India aimed at citizen- and community-led resilience should guide the implementation and decision-making process at COP conferences and enhance the UNFCCC.
- Indonesia's New National Capital Project (Ibu Kota Negara) and India's acceleration of energy transition should serve as catalysts for partnership and collaboration between public and private sectors, a model of convergence that can be applied across the G20.



Setting the Stage

In the ancient cultural heartland of Kutri, in Bali's Gianyar Regency, one climbs up moss-laden steps to a hilltop shrine far from the tourism circuit, in search of the rich connections with nature that shaped and sustained the people who have lived here for millennia. Climbing moss-laden steps, the eye turns to boulders amid the foliage: here are unmistakable patterns of waves, etched into the ancient sandstone eons ago, now lodged on a steep hillside in the verdant landscape of central Bali.

A strenuous climb brings one atop Bukit (hill) Dharma Durga, to the platform adorned with an 11th century stone carving of the Mother Goddess of the Universe slaying the buffalo-headed demon Mahisasura. Mahisasura represents ego and arrogance, in the Balinese cultural tradition. The ancient bas-relief depicts the serene goddess performing an act of liberation, to free the universe from the demons of egotism and pride, so that we humans may acquire the knowledge and wisdom that all living beings are part of the same animating force.

Looking out from the hilltop to the vast sprawl of greenery all around, with the sea on the far horizon, one can marvel at how humans and nature so readily mingle in Bali. Long rambles take one to villages, nestled in forests, along the dikes of terraced rice paddies where the only sound is the gurgle of water, the buzz of insects, the tangled melodies of birdsong.

The living example of rural Bali shows that we are all cohabitants of nature's bounty, even as life spent in large cities blinds us to the richness and value of a life lived in harmony with the natural world. In Indonesia itself, the rural life woven deep into the country's traditions and culture carries coexistence with the natural world as its animating force.

This connection to the earth and its gifts, however, has not stopped human hubris from building a skyscraper-laden city like Jakarta on a sea-level floodplain, where researchers are already warning of rising sea levels as the planet warms due to anthropogenic climate change.

And one wonders whether we will ever be able to understand the allegory of the goddess slaying the demon ego and apply this wisdom, to give us humility in accepting our duty of stewardship to the environment bequeathed to us by hundreds of generations of our ancestors.

Yet the lessons of harmony resonate in Indonesia's ambitions for sustainability. From the groundbreaking ceremony in August 2022 onward, Indonesia will build Nusantara, its new Ibu Kota Negara (National Capital, literally translated as Mother City of the Nation), leaving sinking Jakarta behind, to create a city of two million people fully integrated into nature. Indonesia's success will stand as a beacon of hope in a world ravaged by the fallout of human folly and arrogance.

By the end of 2024, when Indonesia and India have completed their leadership of the G20 group of nations, we will be better able to assess the prospects of escaping climate catastrophe. A terrifying foretaste of the future unfolded with fury on the Indian subcontinent in August and September of 2022, as unprecedented flooding washed away tens of millions of livelihoods in the arid and poverty-stricken reaches of Pakistan.

A civil-society response to the climate calamity needs to be shaped within and among the most vulnerable societies and populations. The Indian subcontinent and the great Indonesian archipelago spanning the equator are home to a quarter of humankind. Their future becomes the harbinger of our collective future.

Our last best hope of a sustainable future lies with Indonesia and India, whose leadership of the G20 group of nations will shape adaptation, mitigation and inclusive climate resilience—with the participation and leadership of people from all walks of life.

An Agenda for the Indonesian and Indian Leadership of G20

India and Indonesia are well positioned to lead the G20 in establishing inclusive climate resilience. With agricultural traditions dating from the earliest human experience, each nation understands that citizens' bond with the land is an essential part of social cohesion and inclusive societal development.

Each country is already embarking on ambitious programs to advance sustainable agriculture, incorporating traditional wisdom. The demonstrated success of these efforts will be an important and essential contribution to global efforts at climate adaptation, mitigation and inclusive resilience.

The G20 itself must make a commitment to funding and supporting key sustainability initiatives in India and Indonesia, to make them scalable for other nations. These action items should include:

Citizen and community-group participation, with a particular focus on those at risk of marginalization, to enable them to be the architects of their own future and participate actively in reforestation and forest management.

Sound natural capital policy and practice drawing on key success case studies on successful natural capital policy, sustainable agro-forest practices and mangrove restoration.

Documenting ample evidence of reforestation and sound forest stewardship as a means of mitigating climate change by enlarging the carbon sink, restoring natural habitat, reviving damaged ecosystems and the purposeful nurturing of biodiversity.

Incorporating indigenous knowledge, traditions and skills that kept forests and humans in symbiotic engagement until the industrial revolution.

Leveraging and integrating the full range of emerging technology, distributed ledger technologies and digital solutions and initiatives and projects, to amplify and scale impact, including the Climate Chain Coalition focused on climate actions for mitigation and adaptation, also encompassing finance aspects. Indonesia's Low Carbon Development and One Map policies are supporting and coordinating efforts to reduce emissions from deforestation and forest degradation, as well as to manage land use planning.

In 2019, the national government also launched the Environment Fund Management Agency (BPDLH) that is tasked with managing environment funds, including a results-based payment mechanism to reduce emissions from deforestation and forest degradation (REDD+). The goal is to reduce emissions from unsustainable land use while promoting alternative livelihoods that help take pressure off primary forests and peatlands.

In India, there is significant momentum in changing attitudes and habits towards environmental sustainability, beginning with cleanliness.

The Digital Economist believes that our common future will be shaped by the progress of Indonesia's and India's efforts to pursue climate resilience and energy transition through inclusive societal development that leaves no one behind.

We welcome India's and Indonesia's commitment to human-centered societal development, their bold measures to pursue social and economic equity and their commitment to better human and planetary outcomes.

Yet we also know that this cannot be achieved in isolation. The immense financial resources concentrated in the G20—whose member countries include the world's most prosperous and advanced economies—must be directed at funding and scaling Indonesia's and India's successes in climate adaptation, mitigation and resilience.



Harnessing the Power of the Digital World for Climate Adaptation, Mitigation, Resilience and Energy Transition

Even as tech evangelists proclaim the value of digital assets in assisting and accelerating the broader sustainability agenda, there is a central dilemma. Is the exponential growth in data and digitalization itself sustainable and climate friendly, even in the short term?

It can indeed be sustainable and climate friendly, if applied responsibly and in a mindset of stewardship. In a provocative study two years ago, EY argued that the energy transition and decarbonization the world needs cannot be achieved without digital technology.

The potential of digitalization as a transformative tool can be well demonstrated in the G20 community, and especially in Indonesia and India. As renewables development accelerates, digitalization is needed to integrate renewables within traditional energy delivery and to improve the reliability of the power grid. Eventually, this measure will advance inclusive societal development and mitigate inequality by reducing the cost of access to electricity, enabling the path to just and equitable energy transition. In Chapter Four of this book, *The Power of the Many*, we note the key role of "programmable energy," a concept developed by one of this paper's authors, Jos Röling of IBM's Global Center of Excellence on Energy and Resources.

Programmable energy consisting of electricity generated by individual citizens, with its value assured by tokenization and recorded on a blockchain-distributed ledger, can be used to advance the sustainable generation of renewable electricity and to assign broad value to sustainable behavior. At the same time, our concept of empowering citizens by tokenizing self-generated energy is only one example of what digitalization can achieve—so long as the energy required to power data production and smart networks comes from renewables.

As the International Institute for Sustainable Development observes, more research and more funding are needed to ensure that digitalization can be used to its full potential to accelerate energy transition, climate adaptation, mitigation and resilience.

One such advance is the promise and potential of the economics of tokenization, whose pioneers include The Digital Economist's Founder and CEO, Navroop K. Sahdev. Token technology, along with other emerging smart technologies (IoT, AI and data analytics), allows us for the first time to create digital assets that can be exchanged between market participants in a manner similar to how

physical goods are exchanged. Concurrently, the advancement of renewable energy generation and storage technologies enables us to complement the traditional capacities of the grid, including developing independent micro-grid systems and a variety of energy aggregator business models. These new business models establish the market for renewable energy developers, increase climate resilience of aging grids and reduce our collective carbon footprint.

The remarkable penetration of the digital world into the most remote parts of India, and the ubiquity of mobile telephony even among its most marginalized populations, are compelling examples of how the digital and physical world can converge for better human and planetary wellbeing. This widespread access is a powerful tool of empowerment, and its potential is only now being unlocked. Prof. Xiaolan Fu, Founding Director of the Technology and Management Center for Development (TMCD) at Oxford University, led a breakthrough in empowering microentrepreneurs, with a focus on women, through widespread access to digital technologies.

The Inclusive Digital Model (IDMODEL) project focused on helping marginalized communities, especially young people and women, who are often disadvantaged and excluded from market participation due to unequal access to education, resources and information. As Dr. Fu puts it, finding a way to help these groups develop income-generating activities is an important element in achieving the UN Sustainable Development Goals leaving no one behind.

Thanks to Professor Fu's leadership, one sees the possibility of achieving equity for much of humankind by making good use of digital technology. She is leading a new digital technology-based business model that seeks to enable the poorest people in developing countries to generate income and empower others by sharing their skills and experience using digital technology.

[The results of the project](#), which was conducted in China and Bangladesh, demonstrate the transformative impact of digital technology applied to people's lives and livelihoods. It drives inclusive societal development, enhancing people's economic resilience, access to information and key skills to support poor societies in confronting the challenges of climate change.

Indonesia and India offer fertile ground for scaling up the inclusive digital model to much more widespread application. We can use the experience of the demonstration projects in China and Bangladesh to apply learnings and best practices in Indonesia and India, charting a path where digital inclusion can become a powerful instrument of both economic and societal empowerment in the marginalized and excluded populations of the Global South, particularly among MSMEs (micro-, small- and medium-sized enterprises), which provide a livelihood for the majority of humans.

The potential of accessible data to build value and empower rural Indians and Indonesians is clearly seen in the [programs run by the Indian enterprise Impactree](#).

Impactree works intensely to build sustaintech platforms with multiple stakeholders across the value chain from corporates, government, not-for-profits and last-mile communities towards climate resilience and inclusive social development. Through Impactree, founder Rajashri Sai has been able to work with multiple partners like Swayam Shikshan Prayog (SSP) to build extensive experience in strengthening last-mile networks through social and economic empowerment across climate resilient agriculture, water, sanitation and hygiene and grassroots female entrepreneurship, migrant and marginalized environment and economic equity etc.

In the **first phase**, Impactree works to align the vision of social enterprises and enabling scale-up of grassroots initiatives, through facilitating connections between various stakeholders across the rural value chain specifically focused on rural livelihoods and education.

This is done by using the **technology** of Impactree's Prabhaav platform. Prabhaav is a cloud-based end-to-end technology platform that accelerates social impact funding by providing real-time assessment, significantly lowering the cost of monitoring programs and improving quality through sectoral benchmarking. The main mission of Prabhaav as a big data platform is to enable data insights from communities directly and work with community leaders and social representatives to make better decisions in the last mile, based on principles of social and cultural embeddedness and their social context.

Prabhaav measures on-field impact using a cloud-based architecture to collect clean databases, standardized questionnaires and statistical correlations to improve on-field decision-making with the mission of empowering field-level workers to understand the nuances of data coming from the ground and build on community-first sustainable interventions. The sophisticated method of impact assessment and data-mapping involves scaling the assessment by applying technologies such as AI and machine learning to analyze field data and deliver on the grassroots level.

In the **second phase**, Impactree has specialized in transforming **data into insights** through the metadata collected in Prabhaav. Through its analysis of climate-resilient enterprise models, Impactree has realized that socioeconomic value chains in developing nations like India today have moved beyond a pyramid to being a diamond. With an increasing middle class and one of the largest youth demographics—66 percent of the population is below 35 years of age—the sociodemographic profile of India has become a diamond. This datapoint is comparable across both India and Indonesia.

At the apex of this structure lie organizations like corporates, MSMEs, government agencies, industries and high net-worth individuals, all of which are crucial in the energy value chain from a growth perspective. Their carbon footprint and aspirations as the apex set the tone for carbon technology adoption and propagation across the value chain.

In the middle exists what we call "middle India" consisting of citizens who are over the necessities phase of energy requirement and hold aspirations to reach the apex of the pyramid. They represent the working-class demographic and startup population who are the backbone of social and economic transformation in the country. They aspire to move towards life choices currently being made by the apex.

The bottom of the pyramid consists of households that are closer to the poverty line and work in or run enterprises or multi-livelihood opportunities in subsistence marketplaces.

When programs on energy transitions and technology interventions are designed, we need to keep in mind both the immediate requirements and—most importantly—aspiration of citizens across the diamond.

For example, when clean brick-based cookstoves were introduced in India, through women-led entrepreneurship models, in 2013 to eliminate the triple problems of foraging for energy, poor energy efficiency of traditional cooking methods and the indoor pollution caused by traditional cooking methods, it was assumed that the adoption and behavioral change would be immediate and large-scale. Unfortunately, it was seen that the level of adoption was very low. But when technology innovation in this space evolved to allow for animal manure to be converted to cooking fuel at a single toggle of a button through a table-top gas stove, it played into the innate pride and aspiration of households to turn on gas like the rest of the developing world. This simple innovation fueled widespread adoption in low-income communities and reduction in forest dependency and carbon footprint across rural India.

Similarly, regulatory changes being introduced by the Indian government like business responsibility and sustainability reporting (BRSR) provide the opportunity for companies to develop products and solutions that can tie into this greater sustainability awareness across both the apex and middle. This increased awareness and enthusiasm and policy change have given rise to consciousness and acceptance of cleaner and more sustainable products like personal electric transport, sustainable fashions etc. across both the apex and middle diamond population today in India. This shows that when policy, innovation and technology work at the same pace, the needle can be moved in the future.

In the third phase **sharing best practices** in the past through SSP, Rajashri Sai has worked with programs in Indonesia in Bali and Lombok in collaboration with USAID to facilitate knowledge exchange and best practices sharing in 2014 in building clean energy access networks in rural context through female entrepreneurship and leadership. These exchanges build on the social, economic and cultural similarities between the countries and allow for exchange and sharing to build lasting solutions in the sustainability landscape.

The scalability of SSP's experience can be tested across India and Indonesia as a powerful pathway to collective action giving voice to the voiceless and power to the powerless.

Scaling up and expanding this model in India and Indonesia will be an important advancement, as the G20 coordinates action to deliver the [UN Sustainable Development Goals and the broader sustainability agenda](#).





The Ties that Bind India and Indonesia

Indonesia and India enjoyed a rich cultural interchange, vigorous trade, a mingling of languages and faith for more than two millennia before European colonization.

Tangible archeological evidence of India's architectural influence in the archipelago is found in fifth-century Hindu temples in central Java, relics of 33 kingdoms of eastern India and the cultural heartland of these islands. The historic name for this ancestral land in India was Kalinga, now including parts of modern Odisha, Telangana, Andhra Pradesh and Tamil Nadu.

Each coastal city in Indonesia has a Kampung Keling, or Kalinga village, which was the settlement and trade center for those ancient Indians.

Even today, residents of Odisha celebrate a grand festival called Bali Jatra (voyage to Bali) celebrating the tradition of Kalinga mariners, artisans and traders. Children float banana-leaf boats with clay lamps in the rivers leading to the sea and on the sea beach itself and gorge on the palm-sugar-laden breads and pastries.

One finds echoes of Kalinga's temple architecture in the abundance of Hindu and Buddhist temples and shrines in central Java. Archaeology marks a clear delineation between the grand epochs of temple building in Java and Odisha.

The great monuments of Prambanan and Borobudur in the vicinity of Yogyakarta (the City of Wisdom) pre-date the grand epoch of Orissan temples. The Merapi volcano erupted catastrophically in 1006, burying Borobudur in ash and debris, inundating the great temple city of Prambanan. Thereafter, hundreds of Kalinga and Javanese craftsmen and artisans—sculptors, stone carvers, masons—returned to Kalinga.

Then began what is called the golden age of temple building in Odisha, including gems such as the Rajarani (King and Queen) and Lingaraja (Lord of Creative Power) in Bhubaneswar, the Jagannatha (Lord of the Universe) temple in Puri, and the Sun temple in Konark—a quarter-scale version of it between Yogyakarta and Prambanan was built in the ninth century.

Indian folk tales are replete with stories of Java and Bali, carried back in oral history. Children hear of heroic voyages and adventures in Champa (today the area around Hue in central Vietnam), mighty Kambhoja (modern Cambodia, home to the monumental Hindu temples of Angkor Wat) and Suvarna Dvipa (golden island, today the largest Indonesian island, Sumatra).

That rich history was revived in the earliest days of independence from colonial rule.

A key figure in that revival was the late Bijayananda (Biju) Patnaik, a former Chief Minister of Odisha (ancient Kalinga). In 1947, Indonesia's first president, Sukarno, asked for India's help in rallying the world against the Dutch colonists who were trying to reclaim Indonesia.

Biju, an expert aviator, and his wife Gyan flew to a remote airport in Java to pick up Sultan Sjahrir, later to become Indonesia's prime minister, and take him to an international conference in India where he could press Indonesia's case.

As a gesture of thanks, Sukarno asked the Kalinga aviator to name his newborn daughter. Biju turned to Sanskrit to name Sukarno's daughter "the radiance of the clouds," Megawati Sukarnoputri, destined to become the first woman elected as President of the Republic of Indonesia.

Indonesia's and India's Pursuit of Social Cohesion

As the nations of the world struggle to find common purpose and common ground in responding to the climate emergency, the experiences of India and Indonesia in forging working unity from a complex array of competing interests, cultures and faiths offers valuable lessons. If there is going to be an effective international response to the triple planetary crisis—climate emergency, pollution and biodiversity loss—the path forward will be guided by the experiences of these two countries, particularly as they embark on ambitious and robust actions for climate adaptation, mitigation and resilience.

In this context, it is useful to consider how these two nations have struggled, and ultimately succeeded, in making diversity and pluralism a strength that contributes to an evolving national identity.

Indonesia's national motto, *Bhinneka Tunggal Ika* (Unity in Diversity), has remained a constant throughout the nation's history as an independent republic. More than a slogan, over the decades it has become the ideal used to forge and bind a diverse nation of many cultures, languages and faith traditions. It has gathered strength over the years, from its birth during Indonesia's declaration of independence from the Netherlands on August 17, 1945.

Sukarno and the leaders of Indonesia's independence movement created Demokrasi Pancasila, or Five-Principle Democracy, as a means of binding a country together: with the full intention of accommodating the many streams of human experience mingled across the sprawling archipelago.

Nearly 60 percent of Indonesians were ethnic Javanese. There was a natural fear that Java would dominate, and that the Sumatrans with their distinctive cultural identities would be forced to submit to Javanese rule.

So Sukarno and his Sumatran colleague Mohammad Hatta made a radical choice: while people could speak regional languages and dialects as part of their cultural practices, there must be one unifying national language.

For this they chose the language spoken in the Riau archipelago, lying between Indonesia and Malaysia, that was the crossroads of the world's great trade routes. The population of Riau was less than one percent of the Indonesian total. Their language had sprinklings of Malay, Javanese, Sumatran, Sanskrit, Persian, Arabic and even a smattering of Chinese: a language built by trade and commerce, easy to learn for any native speaker of Indonesia's more dominant tongues. They decreed that this would be [the language of the Indonesian people: Bahasa Indonesia.](#)

Next came the challenge of religion, of reconciling the monotheism of Islam, followed by a majority of Indonesians, with the panoply of gods and goddesses in Hinduism (seen as different manifestations of one overarching cosmic presence beyond human comprehension) and the precepts of Christianity and Buddhism. Hindu and Buddhist culture had continued to shape and define life in Java and Bali even with the advent of Islam, expressed in Sukarno's native Java as "*budaya Hindu, agama Mussulman*" (Hindu by culture, Muslim by religion).

This is the *Demokrasi Pancasila* Five-Principle Democracy that Indonesia's independence leaders created.

1. A Divinity that is an ultimate Unity (reconciling monotheistic and polytheistic beliefs) *Ketuhanan Yang Maha Esa*.
2. A just and civilized humanity *Kemanusiaan Yang Adil dan Beradab*.
3. Indonesian Unity *Persatuan Indonesia*
4. [Democracy](#), led by the wise representatives of the People
Kerakyatan Yang Dipimpin oleh Hikmat Kebijaksanaan, Dalam Permusyawaratan Perwakilan
5. [Social justice](#) for the entirety of [Indonesia's People](#)
Keadilan Sosial bagi seluruh Rakyat Indonesia.

This foundation has enabled Indonesia's democracy to blossom, take deep root and flourish in the 21st century. The international

community seldom takes note of the Indonesian miracle that evolved in the last quarter century: a vigorous democracy with proper elections and a generation of young Indonesians coming of age in a horizon of hope and progress. It is all the more remarkable, given Indonesia's history in the last half of the 20th century, when societal cohesion seemed more an aspiration than an achievable reality.

Both of Indonesia's 20th century transitions of power were marked by violence. The war of liberation from the Netherlands produced a fledgling democracy. Yet by the mid-1960s, the legacy of colonialism impeded progress toward robust societal development. Indonesia's second president Suharto succeeded Sukarno with the declared intent of quelling a communist coup in 1965-66—[with the clandestine support and vigorous encouragement of the United States](#), which feared that a socialist Indonesia would mean the fall of Vietnam, where it was fighting a protracted war against Ho Chi Minh's communists.

Suharto asserted that the revered national patriarch, Sukarno, was the unwitting victim of the Communists. [Anyone suspected of belonging to the PKI, Partai Komunis Indonesia, was slaughtered by the military—the historians' consensus is around half a million killed](#). Many of them were ethnic Chinese.

Discrimination against Indonesians of Chinese ancestry has a long and terrible history in Indonesia—the enterprise and tenacity that has historically led Indonesian Chinese to flourish in business and commerce has made them a target whenever rulers need scapegoats. In 1740, the [Dutch East India Company slaughtered 10,000 ethnic Chinese in Java](#), to break their grip on Indonesia's economy: a genocide against a mercantile class with few parallels in history.

The Suharto-era campaign against communists had a particular grounding in the geopolitics of the day. At the time, [China itself was plunging into the upheavals of the Great Proletarian Cultural Revolution](#), in which education and advanced ability were held suspect, and millions were arrested and sentenced to toil in communes and factories.

The earlier transition was no less fraught. Indonesia declared independence from its Dutch colonial masters in 1945 as the Second World War ended. The Netherlands was ravaged by the Second World War and its long occupation, with barely two sticks to rub together. Astonishingly, it nevertheless tried to return and reclaim rule over Indonesia. It would take three years before the Dutch would give up and leave.

Suharto's New Order government was led by an all-pervasive political party which in fact denied partisanship. It was anointed as the Working Circle (*Golongan Karya*), shortened to the acronym Golkar, in keeping with the consensus-building governance of independent Indonesia's constitution: a deliberate, audacious attempt to forge a unitary republic from a vast diversity incorporating many religions and ethnicities. It was in fact the modern world's first great experiment in asserting shared values to build a viable future. Suharto's rule laid a strong foundation for building a sense of national identity and unity on the foundation of Demokrasi Pancasila. As Suharto described it:

Pancasila democracy endeavors to strike a balance between the interests of the individual and those of society. It seeks to prevent the oppression of the weak by the strong, whether by economic or political means. Therefore, we hold that Pancasila is a socio-religious society. Briefly its major characteristics are its rejection of poverty, backwardness, conflicts, exploitation, capitalism, feudalism, dictatorship, colonialism, and imperialism. This is the policy I have chosen with confidence.

Eventually, this national identity was made compulsory. A parliamentary resolution in 1983 made Pancasila the state ideology that must be followed by all organizations. It is taught to children from primary school onwards, under the banner of the national motto, *Bhinneka Tunggal Ika* (literally "many becoming one," most often translated as Unity from Diversity). Today, as Indonesia embarks on the ambitious project of building its new national capital Nusantara, *Bhinneka Tunggal Ika* is the founding principle of a project meant to create social and economic equity for all.

When Suharto came to power, six in ten Indonesians were too poor to feed themselves. By mid-1997, as Suharto's rule was increasingly challenged by a resurgent democratic movement, only one in twenty was mired in absolute poverty—unable to feed, clothe and shelter themselves, with hunger and malnutrition as their chronic companions.

Suharto to G. Dwipayana and Ramadhan K. H., in Soeharto: My Thoughts, Words and Deeds: An Autobiography, p. 194.

Yet by 1998, Suharto's New Order government was beginning to crumble. It was blamed for a deep economic plunge in the country, accompanied by widespread social unrest, which

built to a breaking point. Indonesia, with its open banking system and free flow of capital, was in fact a victim of the Asian financial crisis of the era: [a drive-by-shooting of perfectly healthy and growing "tiger economies"](#) by international investors intent on turning a quick buck.

As the comfort of the middle class eroded, the Suharto-era social contract began to unravel. Rather than risk further violence and bloodshed, Suharto resigned, announcing he would be succeeded by one of his minister, Bachruddin Jusuf Habibie.

A series of compromise governments followed Suharto, bringing foes into an uneasy alliance. Habibie, an enthusiastic technocrat who preferred to be known as BJ, lasted only a few months, yet used that time to make a full commitment to democracy.

Parliament then chose the popular spiritual leader Abdurrahman Wahid, head of the Brotherhood of Muslims, whose considerable charm and affability was not enough to assure governing competency. These fragile alliances continued until July 2001, when Parliament ousted Wahid and named his vice-president of 21 months, Megawati Sukarnoputri, as President of the Republic of Indonesia.

Megawati became the sixth woman to lead a Muslim-majority democracy, but three years later, failed to win election to a second term. Ultimately, she even sought the presidency on a ticket that included Suharto's son-in-law Prabowo Subianto as vice-presidential candidate, only to be defeated by a former general, Susilo Bambang Yudhoyono, who over two terms patiently led Indonesia to ever-firmer bolstering of its emerging democracy.

The party founded by Megawati, the Indonesian Democratic Party of Struggle, would eventually prevail in 2014's national elections, electing the popular governor of Jakarta, Mulyano (popularly known by his childhood nickname Joko Widodo, contracted to Jokowi), as the seventh president of the Indonesian republic.

Like Sukarno, Megawati, and Suharto, Joko Widodo is from Central Java—the cradle of the Hindu-Buddhist-Muslim syncretism that gave rise to the values of Demokrasi Pancasila.

President Jokowi, who is currently completing his second term of office, is fully committed to building the new national capital as a showcase of sustainability, returning to the deep traditions of humans integrated into the natural world.

More than seven decades after independence, Indonesia continues to demonstrate that a nation built on shared, core values can weather potentially calamitous political upheavals. And that despite setbacks and struggles, democracy is the enduring value that animates modern Indonesia.

Suharto to G. Dwipayana and Ramadhan K. H., in Soeharto: My Thoughts, Words and Deeds: An Autobiography, p. 194.

Unlike Indonesia, India chose to reflect the diversity of its constituent cultures in accommodating different languages. While Hindi and English were designated as the working languages of the central government, its linguistic diversity is clearly visible, with 17 languages printed on every currency note (now reduced to 15), each in a different and distinctive script.

This broad accommodation was a direct result of the trauma of partition, the British colonial government leaving a poisoned chalice in dividing the British Indian empire into the countries of Burma, India, East Pakistan and West Pakistan—the latter a divided country with 1,600 km of India in between. Subsequently, this designed-to-fail model produced a war and the country now known as Bangladesh.

Partition was supposed to divide the subcontinent between Hindu-majority and Muslim-majority areas, sundering centuries of largely amiable coexistence between ethnic and religious groups. Worst of all, partition left more Muslims in India than in either Pakistan or Bangladesh, sowing a formula for decades of conflict, both within and among the divided nations.

Nonetheless, India was impelled into an unitary state by the momentum of the independence struggle itself, even as the task of nation-building always depended on tradeoffs and compromises between and among states and regions.

Yet this notion of a pan-Indian identity, forged from diversity, began with the struggle for independence, illuminated by the moral leadership of Mohandas Karamchand Gandhi.

Gandhi was an animating figure who caught the imagination of Indians from every stream of the human experience with a sense of being and belonging. Gandhi transcended the divides between religions by preaching that the highest aspiration is to be a kind and loving person, causing neither hurt nor harm through speech and deed, freeing yourself of attachment to material things, focusing on the divinity that resides within each individual.

This catalog of shared values presented an ideal foundation for nationhood that would be built on a culture of love. Gandhi urged his fellow Indians to feel the pain of others, selflessly help the afflicted, respect all, disparage none, welcome and celebrate the world entire, utter no untruth, respect all women as though they were your mother, forsake greed and avarice, reject worldly attachments, yield to neither lust nor anger. He believed in the power of example. Specifically, the power of sacrifice. In Gandhi's view, the glue of social cohesion was to be selfless.

Gandhi forged into his moral weapons:

- *Satyagraha* (literally, adherence to truth. More philosophically, the pursuit of imbuing truth with moral force to improve one's own soul and bring change in the larger world)

- *Sarvodaya* (serving the wellbeing of all)
- *Ahimsa* (the absence of violence)

Rather than the pursuit of individual liberty, he believed in the fulfillment of individual obligations. Our obligations to our family, our friends. The responsibility to care for one another, to believe in one another, to build the bonds of love and trust and fellowship and companionship.

Gandhi had no illusions about the chicanery of politics, about the corrosive power of greed and inequality. Giving of yourself, in the service of those in your family and your community, took precedence over gratifying your personal desires and the exclusive pursuit of your personal happiness. And above all, to make these sacrifices without expecting anything in return. This in itself is the polar opposite of transactional relationships. He believed that this willingness to sacrifice makes you fearless.

His second method was to walk in the shoes of the dispossessed, the forgotten, those at the fringes of society. Gandhi believed that the only democracy worthy of the name would put human dignity far ahead of accumulated wealth. Once the poorest enjoyed the same respect accorded to the wealthiest, when the human dignity of the poorest in a society mattered above all, then we could rightly claim that the arc of history would bend toward justice.

Poverty, in Gandhi's view, was the worst and most pervasive form of violence. Accordingly, he evoked a concept he called *sarvodaya*—a Sanskrit word roughly translating as the welfare of all. It can be more clearly expressed in English as a philosophy that nurtures the common good and enhances the collective wealth.

The twin concepts of *satyagraha* and *sarvodaya* become the radiant principles of Gandhi's goal of societal transformation.

Gandhi thought economic inequality was a tyranny with a sugar coating: that the interests of the rich and powerful would always prevail until we all recognized our obligation to uplift the weakest and powerless. He eschewed his privileged background—his merchant family, after all, had been prosperous enough to send him to the University of London, despite the perpetuated myth that Gandhi came from an impoverished home—to live, eat and dress as simply as possible.

Gandhi's self-generated humility and identification with the poorest of the poor, gave him the ability to build from the ground up: in utter contrast to the post-colonial politicians who often imposed top-down, centralized "solutions" for inequity in their efforts to abet societal development.

The willingness to sacrifice, and to shed privilege to empathize with the poor, was the ardent core of *satyagraha*: to use the power of selflessness and sacrifice to shame the powerful and privileged to dilute their advantages for the betterment of the common good.

While Gandhian ideals and values are sometimes lost in the continued evolution of India, their foundational role in societal development continues to shape and guide India's leadership, particularly in pursuing sustainability.

India's Progress Towards a Net-zero Carbon Future

The Gandhian notion that the wellbeing of India's villages is the foundation of a sustainable future remains a powerful driver of India's transition to net zero: beginning with the necessity of a clean environment.

Early in his first term in office in 2014, Prime Minister Narendra Modi launched a [Swacch Bharat \(Clean India\) campaign](#) to create and promote the duty of environmental stewardship, declaring that

"A clean India would be the best tribute India could pay to Mahatma Gandhi on his 150 birth anniversary in 2019."

The Prime Minister helped spread the message of Swachh Bharat by urging people through his words and action. Modi began by addressing the health problems that roughly half of the Indian families have to deal with due to lack of proper toilets in their homes. [Even Bollywood was enlisted](#) to incorporate Clean India into its movie scripts.

Yet Modi's pledge to achieve net zero by 2070 needs to be accelerated to ensure a sustainable future, as does China's net zero goal of 2060. What is the most viable path forward for net zero by 2050 for India, Indonesia and China? The short answer is strong and sustained investment into adaptation, mitigation and resilience.

Yet in India's case, much depends on action by state and local governments. Given India's diverse democracy, with its many strands of competing interests, the quickest path to net zero will be driven by democratic, decentralized and digitized paths to decarbonization. The city of Mumbai, India's economic hub and a sprawling megacity that is determined to be sustainable, [is committing to net zero by 2050](#). As befitting India's business and finance center, the path to net zero is driven by profitability and risk management: delaying net zero until 2070 could cost India US\$ 35 trillion, [notes Aaditya Thackeray, environment minister of Maharashtra state](#).

Mumbai's plan is founded on a significant transition in the way the city lives and moves. It opens funding pathways to investments in housing, electrifying public transport, investing in water and sanitation, walkable roads, rooftop solar energy plants, water conservation and flood-resistant drainage.

Including Mumbai, Maharashtra has committed 43 key cities in the state to net zero by 2050. The state, which is India's largest sub-national economy, is [pinning much of its ambitions on zero-emission mobility](#). Besides incentives to acquire electric vehicles, the state intends to become a major manufacturing center for zero-emission vehicles.

The state of Tamil Nadu is taking significant leadership in implementing the Modi government's ambitious goal of eliminating single-use plastics, for instance, and aims for a return to the lived experience of older Indians. Well into the 1970s, tea was served in clay cups, fast food on leaf plates held together with bamboo pegs and larger meals on leaves cut from banana plants.

[Tamil Nadu is leading the return](#) to these millennia-old patterns of sustainable living. It has launched a social awareness and social license campaign which, within a year, has seen impressive results.

Such state initiatives are the best hope to accelerate India's transition to net zero by 2050. And in the quest for investments, India's 2022 budget marks a milestone in the world's largest democracy's progress towards a net zero future: it includes a [robust commitment to green bonds](#) to fund climate resilient infrastructure.





The Vital Importance of Nusantara, Indonesia's New National Capital

What will happen when huge metropolitan cities are threatened by the climate emergency? Rising sea levels, according to consensus estimates, will threaten 800 million people living in more than 500 flood-prone cities by mid-century, [mostly in Southeast Asia and East Asia](#).

Many of these cities, including Jakarta, are building defenses such as sprawling sea walls and mechanical gates. As coastal cities continue to face flooding and extreme weather more frequently, tens of millions of people will need to move to higher ground.

Yet will these cities be sustainable and climate resilient? Indonesia's visionary project for a new national capital Nusantara offers an audacious yes. [Indonesia's President Joko Widowo reaffirmed a bold vision](#) to build an entirely new national capital (Ibu Kota Negara or IKN) for Indonesia in the tropical forest of Kalimantan, whose construction began in August 2022. [Called Nusantara \(Indonesian for archipelago\), the new capital will be integrated into the forest itself](#) and serve as a model of sustainability echoing indigenous cultural practices, where humans lived in harmony with nature. Most remarkably, the president has emphasized that [Nusantara is intentionally designed to achieve economic and social equity](#).

As it evolves, Nusantara will be an important model for the world, in incorporating principles of sustainability into every phase of design, and in providing opportunities that will attract people to a live-work-play lifestyle that enables a no-carbon future.

Nusantara is being incorporated into the rain forest of Kalimantan, and built around eight clusters to perpetuate sustainable development and create social equity through sustainable development. These are:

- Clean Technology Industry Cluster
- Integrated Pharmaceutical Industry Cluster
- Sustainable Agriculture Industry
- Ecotourism and Health Tourism Cluster
- Chemical Products and Byproducts Cluster
- Low Carbon Energy Cluster
- A 21st-Century Education Cluster
- Smart City and Industry 4.0 Center

As Bambang Susantono (Chairman, Nusantara National Capital Authority) explained during a May 2022 panel discussion at the World Economic Forum in Davos, Switzerland, Nusantara is a "city for all," created and sustained to be inclusive, green, smart and sustainable.

This sustainability by design begins with inclusive societal development. As noted, Indonesia's

success in building unity from diversity becomes a coalescing force in creating a city that is meant to foster social cohesion. The design of the city is meant to mingle people rather than isolate them (as in suburban models across the world). The physical and social architecture of Nusantara is designed to enable a city that is livable and human-centered, with easy interaction between its people. In his presentation at Davos, Dr. Susantono noted the city itself embodies the national motto, *Bhinneka Tunggal Ika*.

In practical terms, this means social connections are as important as physical infrastructure. And a key component is unity with nature. Nusantara is planned as a city of 2,560 square kilometers, yet only 500 square kilometers will be filled with buildings and roads, with the rest of the area left as forest. With 80 percent of its energy supplied by reliable renewables (mostly hydroelectricity), Nusantara is envisioned as a place where everyone has access to zero-emission public transportation, a "10 minute city" with rapid point-to-point access.

Nusantara also highlights how private capital can fund broader public aspirations when it comes to climate adaptation, mitigation, and inclusive resilience. Only 20 percent of the development costs are from public funds, the rest sourced from public-private partnerships. Rather than waiting for the investment market to fund inclusive resilience, Indonesia is laying out the opportunity for the private sector to fund the creation of a sustainable city. This is an important and scalable approach: the government sets the strategic direction, and deploys private capital to create value.

Recommendations

- Indonesia and India should develop coordinated, citizen-centered and scalable policies for climate mitigation, adaptation and resilience during their presidencies of the G20.
- The purpose of this collaboration should be to ensure broad citizen participation in building climate resilience. This includes forest and landscape management, sustainable agriculture and leadership in restoring a tropical carbon sink that could eventually encircle the globe.
- These collaborative policies should be expressly designed to achieve better human and planetary outcomes.
- Best practices and lessons learned from the Indian and Indonesian collaboration should be used as scalable and adaptable models across the G20.
- The efforts of Indonesia and India at citizen- and community-led resilience should guide the implementation and decision-making process at COP conferences and to enhance the UNFCCC.
- Acceleration of energy transition should serve as catalysts for partnership and collaboration between public and private sectors; a model of convergence that can be applied across the G20.

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G20 group of nations

- The G20 is a multilateral platform that connects the world's developed and emerging economies "in order to achieve international financial stability."
- "The G20 members represent more than 80 percent of world GDP, 75 percent of international trade and 60 percent of the world population."
- The first G20 summit on November 14-15 2008 was called in response to the American economic crisis; the forum was initially created in response to the global financial crisis in 1997-1999.
- The presidency of the G20 rotates every year among its members.
- The Troika consists of the country holding the presidency together with its predecessor and successor.

Conference of the Parties (COP)

- The COP is the decision making body of the convention and is an action oriented body, "promoting the effective implementation of the Convention."
- "The COP assesses the effects of the measures taken by Parties and the progress made in achieving the ultimate objective of the Convention."
- "...the COP Presidency rotates among the five recognized UN regions" (Africa, Asia, Latin America and the Caribbean, Central and Eastern Europe and Western Europe and Others).

United Nations Framework Convention on Climate Change (UNFCCC)

- Ratified by 197 countries, the UNFCCC ultimately aims to "prevent 'dangerous' human interference with the climate system"
- Specifically, the convention aims to "stabilize greenhouse gas concentrations within a time-frame sufficient to allow ecosystems to adapt naturally to climate change."
- Annex 1 countries (belonging to the Organization for Economic Cooperation and Development (OECD)) as the source of most past and current greenhouse gas emissions are expected to contribute the most to cutting emissions.

Each is pursuing an "all of the above" energy strategy

- The IEA-Indonesia Energy Transition Alliance "acts as a framework to work together to support policy development, accelerate Indonesia's energy transition and mobilize high-level political engagement."
- "In 2022, Indonesia will hold the Presidency of the G20. And in 2023, it will assume the Chair of the Association of Southeast Asian Nations (ASEAN)," allowing both national and global focus on energy policies.
- Indonesia's national transition policies and strategies include the National Grand Strategy on Energy.

And sustainable transition

- India's new model of economic development "could avoid the carbon-intensive approaches that many countries have pursued in the past"; "it aims to reach net zero emissions by 2070 and to meet fifty percent of its electricity requirements from renewable energy sources by 2030."
- Prime Minister Narendra Modi's targets for 2030 include "installing 500 gigawatts of renewable energy capacity, reducing the emissions intensity of its economy by 45 percent, and reducing a billion tonnes of CO₂."

- The clean energy transition thus far has included India overachieving "its commitment made at COP 21—Paris Summit by already meeting 40 percent of its power capacity from non-fossil fuels" and increase in solar and wind energy.
- India aims to become a global hub for green hydrogen production and exports, which will play a major role in achieving the net zero and decarbonizing the hard-to-abate sectors.

Faces most of the challenges associated with establishing sustainable agriculture and sound forest stewardship

- The deforestation of Sumatra's forests have contributed to Indonesia's status as one of the world's largest emitters of greenhouse gasses (GHG) resulting from land use
- Jambi Province, home to 2.1 million ha of ecologically important forest areas, including four national parks and the 100,000 ha Harapan rainforest, has also been threatened by mining, illegal logging, and forest fires.
- National solutions: Indonesia's Low Carbon Development and One Map policies aim to reduce emission due to deforestation and manage land use planning; the Environment Fund Management Agency (BPDLH) manages environment funds.
- The ISFL program in Jambi not only helps manage land use but also aims to "help farmers shift away from unsustainable farming into alternative livelihoods such as sustainable fisheries, livestock, and service industries."

UN response to combat desertification

UN-REDD programme

- UN-REDD or "The United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries" is the UN knowledge and advisory platform on forest solutions, namely "reducing forest emissions and enhancing forest carbon stocks."
- UN-REDD currently partners 65 with countries to protect their forests through the advancement of the Paris Agreement, namely Articles 5 and 6, which aim to "reduce deforestation, promote sustainable land uses, advance international cooperative approaches to climate mitigation and mobilize climate finance to turn the tide on tropical deforestation."
- UN-REDD countries have submitted forest emissions reductions equal to taking 150 million cars off the road for a year.
- The programme's 2025 goals include, "forest emissions reducing by 1 gigaton per year, USD 5 billion being mobilized by 2025, and over 15 countries enhancing forest ambitions in NDCs."

Agro-forestry focus

- "Sustainable food and agriculture (SFA) contributes to all four pillars of food security (availability, access, utilization and stability), and the dimensions of sustainability (environmental, social and economic)."
- The Food and Agriculture Organization of the United Nations promotes SFA in order to address SDGs and achieve Zero Hunger.
- The five key principles of sustainability for food and agriculture include, "Increase productivity, employment and value addition in food systems, protect and enhance natural resources, improve livelihoods and foster inclusive economic growth, enhance the resilience of people, communities and ecosystems and adapt governance to new challenges."

Food-security-related SDGs

- In response to an increasing global population, sustainable food security has highlighted "increases in agricultural production, improving the global supply chain, decreasing food losses and waste, and ensuring that all who are suffering from hunger and malnutrition have access to nutritious food."
- The Zero Hunger Challenge has called for states and other entities to achieve "zero stunted children under the age of two, 100 percent access to adequate food all year round, all food systems being sustainable, 100 percent increase in smallholder productivity and income, and zero loss or waste of food."
- SDG 2 in focusing on "ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture" recognizes its connection to the other SDGs through "supporting sustainable agriculture, empowering small farmers, promoting gender equality, ending rural poverty, ensuring healthy lifestyles, and tackling climate change."
- The productivity of food production depends on the restoration of degraded lands, management of scarce water using improved irrigation and storage technologies, and the development of drought-resistant crop varieties.
- In response to climate change, namely changes in temperatures, precipitation and pests, there has also been a call for research to improve the sustainability of food systems.

Provocative research on drylands

- Arid ecosystems are defined by their lack of water availability due to low precipitation and water loss due to evapotranspiration.
- Dryland plants adapt to water scarcity through "the ability to capture rain and deliver it as stemflow to the soil around the base of the plant," and on a community level, patchy vegetation allows for a more abundant plant cover.
- A desert environment's Critical Zone (CZ) "ranges from the top of the vegetation biome down to the bottom of the aquifer and includes regolith and both the weathering and soil profile."
- The surface environments of arid lands are sensitive to weather events as aridity and surface albedo are affected; with rainfall the surface may become windblown sand, "which has a higher albedo than a vegetated surface."

Work on land use

Ant Forest

- The Alipay Ant Forest project incentivizes its users to reduce their emissions through awarding "green energy points"; these points contribute to growing a virtual tree on the user's app, which translates to Alipay planting a real tree or protecting a conservation area; the project aims to address SDG 13
- The Alipay Ant Forest project has also created job opportunities and income by involving farmers in planting trees, developing organic agricultural products, and connecting them with e-commerce platforms.
- The project uses a bottom up approach allowing people to directly address environmental challenges through "integrating a range of low-carbon activities into daily life."

Trillion tree campaign

- The restoration of forests serves as a buffer against the climate crisis, becoming instrumental in keeping the temperature rise below 2°C, generating jobs, and protecting biodiversity.
- The campaign's mission is to increase the global forest cover by a third, restoring 1 trillion trees without encroaching on agricultural land.

- The restoration of forests also helps "build wealth in the countries of the Global South" by creating the potential for restoration based economies.
- The campaign has suggested the use of wood within the construction industry as 13 percent of global greenhouse gas emissions are caused by the production of concrete and steel.

EIT Food

- Supported by the EU, EIT Food aims to establish an accessible and sustainable food system through:
- Protein Diversification: the creation and circulation of alternative proteins in an effort to address the environmental impacts of over producing animal-based protein
- Circular Food Systems: "resources are reused, nutrients recycled, by-products reduced and what remains is reutilized."
- Digital Traceability
- Sustainable Agriculture
- Sustainable Aquaculture
- Targeted Nutrition

Bio-carbon fund

- In collaboration with countries, The BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL) aims to "reduce emissions from the land sector."
- The ISFL uses a landscape approach, which promotes sustainable land use by considering the "trade-offs and synergies" between different land-oriented sectors (forests, agriculture, energy, mining, and infrastructure).
- The ISFL also emphasizes public-private partnerships; in collaboration with the private sector, the ISFL provides livelihood opportunities for communities in each jurisdiction and mobilizes finance for critical investments.
- Globally "the ISFL works with global forums of companies that have pledged to reduce their impact on tropical forests and incentivizes countries to reduce GHG emissions, by providing "significant results-based climate finance over a period of 10 years through the purchase of verified emission reductions."

Climate action support

- Over the past decade, 1.7 billion people have been affected by extreme weather and climate-related disasters.
- If average global temperature rises by 2°C from pre-industrial levels, an additional 189 million people are expected to be pushed into hunger.

Is swayed by public protest

- Students protested in Indonesia in response to high cooking oil prices and President Joko "Jokowi" Widodo's tenure in office.
- The prospect of the president's extension was raised by the possibility of Jokowi either changing the constitution or delaying the 2024 election; Jokowi confirmed that an election would still be held in February 2024
- "A recent survey by pollster Saiful Mujani Research and Consulting (SMRC) showed more than 70 percent of Indonesians reject the extension plan."

Public opinion, especially among ordinary citizens

- India's Prime Minister Narendra Modi withdrew "the controversial agriculture laws that prompted yearlong protests from tens of thousands of farmers."
- The agriculture laws were deemed necessary in modernizing India's agricultural sector and increasing production through private investment; the laws would impact farmers "by ending guaranteed pricing and forcing them to sell their crops to corporations at cheaper prices."
- "Clauses in the legislation also prevented farmers from resolving contract disputes in court."

About The Digital Economist



The Digital Economist is a global impact ecosystem focused on building insights, products, services and programs toward human and planetary outcomes.

We are a multidisciplinary impact platform where ideas are born, nurtured and implemented to create a better, thriving world. Our mission is to drive technological convergence toward a human-centered digital economy based on 5 key pillars: sustainability, equity, transparency, decentralization and radical collaboration.

Advisory

To leverage the formidable expertise and experience of our ecosystem to the benefit of diverse stakeholders, The Digital Economist undertakes formal client engagements focused on three core practice areas: Digital Assets, Sustainability and Purpose-driven Change.

For more information about our advisory services or if you would like to establish a strategic partnership with The Digital Economist, please reach us at info@thedigitaleconomist.com. Media inquiries can be directed to press@thedigitaleconomist.com.

"Who is a Digital Economist? The word 'economy' comes from the Greek word 'oikonomia' which means 'household management' - our planetary household. 'Digital' represents augmented human capabilities through technology, which is a means to crystallize human imagination. The Digital Economist combines imaginative use of technology and the mastery of tools to become a steward of the planetary global economy"
- Navroop Sahdev, Founder and CEO



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