



# STATE OF THE TROPICS

2020 REPORT



EXECUTIVE SUMMARY

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## AUTHORS AND ACKNOWLEDGMENTS

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Since the publication of the inaugural State of the Tropics report in 2014, the world has continued to change rapidly. This is particularly true for the Tropics. Cities have kept growing, more people have escaped extreme poverty, and people are healthier and living longer than ever before. However, improvement has not been uniform. Persistent pockets of extreme poverty remain throughout the Tropics, undernourishment is increasing and climate emissions continue to rise. The COVID-19 pandemic of 2019–2020 has affected the world in an unprecedented way and is already having a major impact on the health and economic systems in tropical countries. Refocusing the world's attention on the Tropics is more important than ever.

With the adoption of the United Nations 2030 Agenda for Sustainable Development, 2015 became a milestone year for global development. This ambitious international program, at the centre of which lie 17 Sustainable Development Goals, is 'a plan of action for people, planet and prosperity'. This plan includes eradicating poverty in all its forms, protecting the planet from all forms of degradation and ensuring all people can enjoy prosperous and fulfilling lives in a peaceful, just and inclusive society.

Now, five years after the adoption of the 2030 Agenda, is an ideal time to assess the opportunities and challenges facing the tropical region once again. It is time to systematically assess the state of the region, to take stock and to develop the means to work towards a common future that recognises the potential of this dynamic and diverse region. This report offers an extensive exploration of key environmental, social and economic indicators, to assess progress in the tropical world and answer the question: Is life in the Tropics still getting better?

In this report, the findings are based on two key systems essential to assess progress and sustainability: the Earth System and the Human System. The Earth System provides the services that underpin all life on Earth, while the Human System is a subset of the Earth System, acknowledging that the health of the planet is essential to sustainable health, development, progress and prosperity in the Human System. The Earth and Human Systems are further divided into key themes, which are then assessed through indicators. It is through analysis of the indicators that the question of whether life in the tropics is getting better is assessed. This 2020 report includes additional indicators to those used in the 2014 report, thanks to more extensive data having become available, particularly through the 2030 Agenda for Sustainable Development.

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## PART A—THE EARTH SYSTEM

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### Chapter 1—Atmosphere

- Globally, carbon dioxide (CO<sub>2</sub>) emissions (as CO<sub>2</sub> equivalents; CO<sub>2</sub>e) have continued to increase since the previous report. Although the Tropics continues to be a much lower emitter of CO<sub>2</sub>e (20%) both in total and per capita emissions compared to the rest of the world, CO<sub>2</sub>e emissions have climbed at a greater rate in the Tropics compared to in the rest of the world. This pattern varies among the tropical regions. Across the Tropics, total CO<sub>2</sub>e emissions have been increasing since 2010, with increases ranging from 0.5% to 72% across tropical regions. The rapidly expanding economies of South Asia and South East Asia have been the greatest drivers of increased CO<sub>2</sub>e emissions in the Tropics.
- The social, environmental and economic impacts associated with climate change are being recognised by the global community, with increased societal concerns across nations in both the Tropics and the rest of the world. Modelling across a range of indicators suggests that the effects of increased greenhouse gas emissions will have a much larger impact on tropical, as compared to mid-latitude, communities, habitats and biota.
- Electricity generation has continued to increase across most tropical regions since the previous report, with renewable energy also increasing but not at the same rate. Hydroelectricity generation has plateaued since about 2015, in part due to reduced options for additional hydroelectric construction and changing precipitation regimes leading to reduced reliability. Uptake of other forms of renewable energy and the decentralisation of electricity supply are being prioritised in many regions to both meet community needs and reduce reliance on, and the economic burden of, fossil fuels. The latter of these points is of particular importance to many island nations in the Tropics.
- Globally, air pollution as particulate matter (PM<sub>2.5</sub>) has decreased since 1990; however, the reported results do not reflect differences between rural and urban environments and may not reflect variations within countries. Despite the decrease in PM<sub>2.5</sub> globally over the last 30 years, no region is below the recommended annual guideline set by the World Health Organization.

## Chapter 2—Land and Water

- Land degradation continues to impact communities through increased desertification and the loss of topsoil so fundamental to agriculture. Coupled with increasing water scarcity, this is intensifying risks to agriculture and biodiversity globally, and especially in the Tropics due to the greater vulnerability of many tropical populations. Many of the options for combatting water scarcity are energy and economically intensive or are of low quality, making them unviable for poor communities. The combination of reduced water and increasing land degradation can also result in reduced agricultural productivity.
- Globally, agricultural land area has not changed significantly in the last 27 years; however, in the Tropics, there have been increases in both area and productivity. Of some concern though is the shift from food crops to biofuel crops in some regions, which provide trade income, but potentially at the expense of community sustainability and self-sufficiency.

## Chapter 3—Oceans

- It is estimated that 33% of coral species are threatened and at greater risk of extinction compared to most other groups.
- Coral reef systems face a number of local and regional threats (e.g., destructive fishing techniques and pollution) as well as global threats (e.g., coral bleaching as waters warm due to climate change).
- Mangrove area has increased across all tropical regions except for Northern Africa and the Middle East, although the rate of increase is slowing.
- Wild marine fish capture has continued to grow, with catch in the Tropics increasing at a higher rate than in the rest of the world.
- Aquaculture production is continuing to increase in the Tropics. Crustacean aquaculture is greater in the Tropics, while the rest of the world continues to dominate in fish aquaculture.

## Chapter 4—Biodiversity

- The number of species assessed for threat status has continued to increase globally. In the Tropics, the proportion of birds and mammals threatened has increased, while a decrease in the number of threatened amphibians, reptiles and plants has been observed. Decreases in the proportion of threatened species can be attributed to many factors, including removal of species from the IUCN Red List due to improved management and conservation efforts, as well as a substantial increase in the number of species assessed globally. However, the increase in the proportion of threatened species seen in other animal groups may be due to increased local threats and global pressures.
- The proportion of global terrestrial area under protection has continued to increase, although the Aichi Biodiversity Target of 17% of terrestrial area under protection by 2020 is unlikely to be met. Protection within the Tropics is currently better than in the rest of the world in general, with some tropical regions having over 20% of their terrestrial area protected.
- Marine protected areas (MPAs) have also increased in recent years, with many tropical regions having large parts of their exclusive economic zones (EEZs) under some level of protection. MPAs are increasing at a greater rate than terrestrial protected areas. The extent of protection in international waters (outside EEZs) is much lower than in areas within EEZs.
- Forest area continues to decline globally, with the Tropics continuing to lose area, although the rate of loss is beginning to slow.

### Chapter 5—Poverty and human settlements

- Globally, extreme poverty has fallen consistently since the early 1990s. Although there have been ongoing improvements in the Tropics, the vast majority of the extreme poor live in tropical countries (85%). Between 1990–1994 and 2015–2019, the proportion of people living in extreme poverty in the Tropics declined by 22.4 percentage points, or around one-third (35%). However, our estimates suggest almost 670 million people remained in extreme poverty in 2018.
- Just five countries (Nigeria, the Democratic Republic of Congo, Ethiopia, India and Bangladesh) are collectively home to 50% of the world's extreme poor.
- The decline in moderate poverty has been modest at best. In the Tropics, the proportion of people living in moderate poverty declined from almost 70% in the early 1990s to 45% in recent years. However, the total number of people living in moderate poverty, in so far as data are available, remains at more than 1.3 billion and has increased since 2014.
- After several decades of progress in improving rates of undernourishment, there has been a reversal in trends in recent years, particularly in the Tropics. The total number of people affected by undernourishment around the world is estimated to have increased from approximately 804 million in 2016, to nearly 821 million in 2017. In the Tropics, the proportion of the population experiencing undernourishment decreased from 20.3% in 2000 to 13.6% in 2016. However, between 2014 and 2016, the prevalence of undernourishment increased in the region, with an additional 15.7 million people affected.
- Urbanisation can have an important influence on poverty, particularly poverty alleviation. The world's urbanisation rate has grown rapidly since 1980, increasing from 39% to 55% in 2018. During that period, the urban population rose from 1.7 billion to 4.2 billion. In the Tropics, although more people live in rural areas than in urban centres, cities are growing at a faster rate. Between 1980 and 2018, the proportion of people living in tropical cities increased from 30% to 47%. By 2018, there were more than 1.5 billion people living in tropical urban areas.

### Chapter 6—Health

- The Tropics is at the nexus of biodiversity loss, climate change, emerging and persistent disease, rising prevalence of non-communicable diseases (NCDs), urbanisation and globalisation. Although it is not yet known how the global COVID-19 pandemic of 2019–2020 will affect tropical countries, their high existing disease burden and already strained health systems suggest the effect will likely transform these societies.
- In the middle of the 20th century, the majority of tropical countries had a life expectancy at birth of less than 50 years. By 2017, despite still lagging behind the rest of the world, most tropical countries, with only a few exceptions, now have a life expectancy at birth of greater than 60 years of age.
- The number of people between the ages of 15 and 49 living with HIV in the Tropics is much higher than in the rest of the world. In 2018, an estimated 16.8 million 15–49-year-olds in the Tropics were living with HIV, compared to 7.3 million in the rest of the world. However, since a peak around the turn of the century, the proportion of people living with HIV has declined significantly.
- Malaria incidence rates fell by 25% globally between 2000 and 2017, with the number of cases dropping from an estimated 241 million to 223 million. An estimated 97% of malaria cases occurred in the Tropics in 2017. Unfortunately, in some regions, improvement has stagnated.
- An estimated 62% of all new TB cases in 2018 (more than 6 million) occurred in the Tropics, and the incidence of TB in the Tropics is more than double that for the rest of the world.
- The emergence of drug-resistant TB is an ongoing challenge in some tropical countries.
- Neglected tropical diseases (NTDs) are a group of 20 diseases and other health conditions that affect more than one billion people each year, predominantly in tropical nations. While not fatal in most incidences, they cause widespread disability and a substantial burden of disease.
- Some tropical countries are still undergoing epidemiological transition, such that rates of NCDs are continuing to increase alongside persistently high rates of infectious diseases and undernourishment.
- Maternal, newborn and child deaths have continued to decline globally and in the Tropics; however, far too few women, children and adolescents have access to essential, good-quality healthcare and education in the Tropics.

## Chapter 7—Education

- Mean years of schooling has continued to increase throughout the world and in the Tropics, although the gap between the Tropics and the rest of the world changed very little between 2000 and 2017.
- Youth literacy in the Tropics continues to increase alongside years of education, although concerns around the quality of education remain.
- Adult literacy rates are considerably lower in the Tropics than in the rest of the world. Although literacy has improved in the Tropics, the gap between the Tropics and the rest of the world has increased since 2000.
- Tertiary enrolments have risen in the Tropics and globally, although some tropical regions have shown very little improvement since 2000, with enrolments only matching population growth.

## Chapter 8—Economy and employment

- Gross domestic product (GDP) per capita has continued to increase globally following the global financial crisis of 2008–2009; however, the existing gap between the Tropics and the rest of the world has grown larger, indicating that economic growth in the Tropics is not keeping pace with global growth.
- Since 2013, debt service has increased across the Tropics—a warning sign of future debt challenges for the Tropics. Avoiding a repeat of the debt crisis of the early 1990s will be essential for tropical countries to achieve a sustainable future.
- Remittances are an important part of tropical economies. In 2017, tropical countries received close to 50% of all global remittances and, importantly, remittances accounted for more than 2.3% of total tropical GDP. Comparatively, while countries in the rest of the world received the other 50% of total remittances, this accounted for less than 1% of their total GDP.
- In the Tropics, the unemployment rate (estimated at 4%) is lower than in the rest of the world and the global average, and has declined since 2000.
- The COVID-19 pandemic of 2019–2020 will likely have a significant impact on the global economy and unemployment for some time to come; however, it is not yet clear what the impact will be for tropical countries.

## Chapter 9—International trade and investment

- Exports as a percentage of GDP increased rapidly in the Tropics between 1990 and 2008, at which point a sharp decline (echoed globally) occurred due to the global financial crisis (GFC). The decline in the Tropics was less severe than in the rest of the world. The decline in export income after 2011 is likely due to the falling commodity prices during this period, with the uptick between 2016 and 2017 reflecting recovery in these prices.
- The GFC in 2008 not only led to a worldwide decline in exports, but also imports, as reduced demand from developed nations flowed through to demand for imports for the production process from exporting nations. Although imports may have been expected to increase with the falling commodity prices between 2011 and 2016, the value of those imports declined.
- Growth in foreign direct investment (FDI) in the Tropics displayed less volatility than globally, with the GFC having a much smaller impact than in the rest of the world. Although as a proportion of GDP, FDI is more important in the Tropics than in the rest of the world, it accounted for just 32% of global FDI flows in 2017, up from 25% in 1990.
- Currently, China is one of the largest drivers of FDI in the Tropics and thus it is likely there will be some impact from the COVID-19 pandemic on investment in the Tropics.

## Chapter 10—Science and technology

- Despite improvement, investment in research and development (R&D) in the Tropics remains much lower than in the rest of the world. Globally, more than 2.2% of GDP was spent on R&D in 2016–2017, a value that has changed little since the turn of the century. In the Tropics, however, R&D spending (in nations for which data are available) has increased by more than 30 percentage points, equating to an increase of more than 70% in total spending. In 2016, total R&D spending in the Tropics accounted for 12% of global R&D spending.
- Dominated by China, Europe, the US and increasingly the Republic of Korea, the rest of the world has a much greater rate of patent filing than the Tropics. However, patent filing in the Tropics grew steadily between 2000 and 2017, with little impact from the GFC.
- Globally, between 2014 and 2016, there was a decline in science and technology journal articles published in all fields; however, this was not mirrored in the Tropics. In 2016, the Tropics accounted for 12% of Scopus articles published worldwide, up from 9% in 2003. This proportion has revised up previous estimates as reported in the 2014 State of the Tropics report, but still indicates a gap between the Tropics and the rest of the world, particularly proportional to the human population.

## Chapter 11—Human security

- In the Tropics, the share of the population who are considered migrants has changed very little and even declined slightly between 1990 and 2015, whereas in the rest of the world the migrant share has grown. This indicates that most migrants living in tropical countries have migrated from other tropical countries, while in the rest of the world, migrants come from everywhere.
- The number of refugees globally has increased substantially since 2010 and is now even higher than in 1990. According to the United Nations High Commissioner for Refugees (UNHCR), the number of official refugees in 2018 was the largest ever recorded. Importantly, more than two-thirds of all refugees globally come from just five countries: the Syrian Arab Republic, Afghanistan, South Sudan, Myanmar and Somalia.
- Key refugee crises currently in action in the Tropics include those in Burundi, the Central African Republic, the Democratic Republic of Congo, Nigeria, Myanmar, South Sudan, Venezuela and Yemen.
- Globally, the number of internally displaced people has increased dramatically since the turn of the century. In 2018, 40 million people were considered displaced in their own countries, compared with just under 6 million in 2000—an almost 600% increase. Of these 40 million, refugees in tropical countries accounted for 28 million (68%).
- The global homicide rate has decreased since the turn of the century; however, much of this is a reflection of population growth rather than fewer overall homicides. In the Tropics, there has been a much smaller decrease, with homicide rates remaining much higher than in the rest of the world. The highest homicide rates are found in South America, Central America and the Caribbean.

## Chapter 12—Gender equality and discrimination

- Civil society is considered more effective if parliament is widely representative of the population. Despite this, in 2018, only three countries had lower house representation from women of more than 50%.
- Globally, the representation of women in many facets of society has continued to improve. Over the past two decades, women's share of global lower or single house parliamentary seats has increased from just 13.5% in 2000 to almost 24% in 2018. Although representation remains lower in the Tropics than in the rest of the world, there has been significant progress since the turn of the century, increasing from 10.3% in 2000 to 23.9% in 2018.
- There are fewer women in management positions in the Tropics than in the rest of the world; however, this varies substantially by region. In no country for which data are available does the proportion of women in management positions exceed 50%. In the Tropics, representation is notably low in South Asia and South East Asia.
- Consensual same sex sexual acts are only legal in 52% of the tropical countries for which data are available, and same sex marriage is only legislated in 5% of countries in the Tropics. Far fewer countries again provide any kind of legislative protection against discrimination on the basis of sexual orientation, gender identity or expression. In the rest of the world, 78% of countries allow consensual same sex sexual acts and 26% have legislated same sex marriage.

## Chapter 13—Infrastructure

- Access to an improved water source through provision of infrastructure has steadily increased in the Tropics in line with global improvements. In 2017, an estimated 89% of the global population had access to an improved water source, an increase from 80% in 2000. Outside the Tropics, access increased from 87% in 2000 to 93.5% in 2017, while the change in the Tropics was from 71% to 82%.
- Progress has been made towards realising universal access to improved sanitation infrastructure but this goal is unlikely to be achieved by 2030. Between 2000 and 2017, the proportion of the world's population with access to improved sanitation facilities increased from 56% to 73%. In absolute numbers, this equates to almost 2 billion people, or one in four people worldwide, that still do not have adequate access. Most of this infrastructure deficit is in the Tropics, where just under 60% of the region's population (1.9 billion people) had adequate access in 2017.
- The number of people travelling by air has grown continuously since the early 1980s with the global economic downturn in 2008 only having a small impact. Air passenger traffic in the Tropics has grown at an average of 5.2% per annum since 1981, while in the rest of the world it grew at just under 4.8% per annum. In 2018, air traffic passengers travelling in carriers of tropical origin accounted for 23% of global passengers, up from 12% in 2000. Compared with the GFC, the COVID-19 pandemic of 2019–2020 will likely have a profound impact on air travel globally, with the effects continuing to be felt for many years.



- It is estimated that around 90% of world trade by volume is now carried by ships. Ports, and particularly those capable of handling large volumes of containers, are a means of integration into a global economic system and essential to many tropical nations. Comprehensive data on the volume of containers are only available from 2007; however, since then, the volume of container traffic globally has increased 5% per annum. The growth in tropical regions has been higher, at 10% per annum.
- In the Tropics, just over 79% of people had access to electricity in 2017, up from 58% in 2000. Although access has improved considerably, it remains much lower than in the rest of the world, where 96.5% of people have access. For further perspective, almost 700,000 people in the Tropics do not have access to electricity, constituting 82% of those without access to electricity globally.
- Globally, it appears that mobile phone ownership is almost universal, with subscriptions outnumbering people. However, the overall proportion of mobile phone ownership in the Tropics is lower, at 95 mobile phone subscriptions for every 100 people.
- In 2017, 49.7% of all people used the internet, an increase from just 7% in 2000. In the rest of the world, internet use far exceeds that of the Tropics, where it passed 50% in 2015. Internet use increased in the Tropics from less than 1.5% in 2000 to almost 40% by 2017, with growth especially rapid between 2015 and 2017, increasing by seven percentage points. Nevertheless, the gap between the rest of the world and the Tropics has narrowed only slightly since 2015, and the digital divide persists.

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## TROPICAL CASE STUDIES

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This report also includes several case studies, contributed by experts from around the Tropics, that explore an aspect of tropical development in detail.

In **Case Study 1**, Mamadou Diakhite, Teko Nhlapo and Diana Mawoko from the African Union for Development (AUDA-NEPAD) discuss the success of the African Forest Landscape Restoration (AFR100) Initiative, a country-led effort to restore 100 million hectares of degraded and deforested landscapes across Africa by 2030.

**Case Study 2** by Linda Vergnani explores the Tropical Partnership Project, a James Cook University–led collaborative venture that, over two years, trained 53 health research fellows, boosted epidemiological research and improved the capacity of governments and health professionals in five Indo-Pacific nations to detect and deal with existing and emerging infectious disease threats.

With exceptional timeliness, **Case Study 3** by Chimwemwe Chamdimba of AU-DEPAD looks at the socioeconomic impact in Africa of disease outbreaks and epidemics, including Ebola and tuberculosis, and the African Union’s development of an effective and efficient multi-sectoral emergency preparedness and response system.

**Case Study 4**, authored by Hamady Diop, Bob Kalanzi and Younes Touitha, discusses the important role that regional economic communities can play in connecting Africa to global production networks and value chains, boosting both intraregional trade and Africa’s share of global trade.

In **Case Study 5**, Jennifer McHugh and others showcase the Creating Futures conferences and workshops, which are aimed at strengthening effective leadership and governance for mental health in Australasia and the Pacific. The strength of this program arises from a genuine cross-national desire to support each other and share lessons in mental health outcomes across national borders.

**Case Study 6** by Carol Archer and Anetheo Jackson from the University of Technology in Jamaica presents a case for adequate housing in the Caribbean and discusses progress in this area against the Sustainable Development Goals and New Urban Agenda.

**Case Study 7** takes us to Latin America, one of the most urbanised regions of the Tropics, where Cecilia Rojas López from the Singapore University of Social Sciences explores how promoting the use of more active and sustainable forms of mobility can make cities safer, healthier and more sustainable.