

Indo-Pacific Era Strategic Centre

Mapping the Geopolitics of the Next
Indo-Pacific Century.

October 2021

CLIMATE CHANGE
page 3

ENERGY SECURITY
page 4

FOOD SECURITY
page 5

HEALTH SECURITY
page 6

HUMANITARIAN ASSIS-
TANCE AND DISASTER
RELIEF
page 7

MIGRATION
page 8

Advancing the Peaceful Uses of Nuclear Technology for a Sustainable Future



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The peaceful uses of nuclear technology have time and time again risen up to address the world's pressing and complex challenges, including non-traditional security issues. Access to the peaceful uses of nuclear energy, science and technology is a core benefit of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). However, this aspect has been underappreciated as a key achievement of the NPT over the past 50 years. The inalienable right of States to peaceful uses institutionalised by Article IV of the NPT has reinforced their efforts to meet their national development goals and attain many of the Sustainable Development Goals (SDGs), including enhancing food security, providing clean water, combatting zoonotic diseases, interventions focused on climate change mitigation and adaptation efforts, natural resource management, and environmental protection.

Preparing for zoonotic disease outbreaks

Most recently, nuclear science and technology are being utilised to ad-

dress two key relevant issues that affect all countries, including Southeast Asian nations: zoonotic diseases and marine plastic pollution. The obvious lesson from the pandemic is the lack of global preparedness to respond early to the outbreak of zoonotic diseases. In this regard, the International Atomic Energy Agency (IAEA) launched its COVID-19 response that involves the deployment of real-time RT-PCR test equipment, a nuclear-derived technique widely used during this pandemic, to more than 120 countries. Further to its pandemic response, the IAEA has started helping countries boost their detection capability to prevent future zoonotic disease outbreaks using nuclear-derived techniques, under its Zoonotic Disease Integrated Action (ZODIAC) initiative.

Reducing marine plastic pollution

Another area where nuclear technology can make an impact is marine environmental protection. The IAEA is at the forefront of deploying nuclear science and technology to address plastic pollution through its new initiative, the Nuclear TEchnology for Control-

ling Plastic Pollution (NUTEC Plastic), which aims to explore and rapidly expand the use of nuclear technology to combat ocean plastic pollution and reduce plastic waste globally. Nuclear techniques can contribute to the assessment of the dimension of the plastic pollution as well as to the recycling of plastic through radiation techniques.

Southeast Asian countries strongly support and intend to participate in these two initiatives, banking on their decades-long experience in utilising nuclear technology and fruitful cooperation with the IAEA. The integration of the NUTEC Plastic project with their plastic waste control programmes will certainly enhance their respective action plans which all promote the deployment of innovative scientific solutions. The ZODIAC Initiative can certainly equip them with a new tool in preventing, preparing for and responding to zoonotic diseases.

Strengthening climate change adaptation

While ongoing debates on the critical role of nuclear power plants in achieving the goals established in the 2015 Paris Agreement remain unsettled, the role of other peaceful applications of nuclear technology in climate change adaptation has been expanding in recent years, including in Southeast Asia.

Nuclear technology has helped farmers grow rice that can cope with the diverse effects of climate change. Recent innovations from Indonesia, Malaysia, the Philippines, Thailand and Vietnam showed how farmers have boosted rice production in harsh climate conditions in the past five years with the help of nuclear techniques. In the past years, the IAEA and the Food and Agriculture Organization have been helping local scientists use nuclear technology to develop climate-smart agricultural practices and improve water management.

Addressing fears and misconceptions

There are still challenges to the expansion of the peaceful uses due to misconceptions or concerns about nuclear energy and technology. There is a need to reframe nuclear issues as one that links nuclear technology with SDGs. The misconceptions emanating from issues of nuclear weapons proliferation, nuclear accidents such as in Fukushima and Chernobyl, and radioactive contamination can be addressed by how nuclear technology actually help countries achieve several of the SDGs.

Regional cooperation would significantly help expand the use of nuclear technology in Southeast Asia. Building on the growing regional cooperation in nuclear safety and security, countries can explore innovative solutions to many of the complex challenges, from disease detection, climate adaptation to reducing plastic pollution with safe, secure, and peaceful uses of nuclear technology.

Suggested Readings

- Abe, Nobuyase. 2020. "The NPT at Fifty: Successes and Failures." *Journal of Peace and Nuclear Disarmament*, 3 (2): 224-233. <https://www.tandfonline.com/doi/full/10.1080/25751654.2020.1824500>.
- Grossi, Rafael Mariano. 2021. "Committed to stopping pandemics." *IAEA Bulletin*, 62-3, September. <https://www.iaea.org/committed-to-stopping-pandemics>.
- Llukmani, Fiorda. 2021. "ZODIAC, the global initiative to fight future pandemics." *IAEA Bulletin*, 62-3, September. <https://www.iaea.org/zodiac-the-global-initiative-to-fight-future-pandemics>.
- Trajano, Julius Cesar and Mely Caballero-Anthony. 2020. "The Future of Nuclear Security in the Asia-Pacific: Expanding the Role of Southeast Asia." *International Journal of Nuclear Security*, Vol. 6, No. 2: Article 8. <https://doi.org/10.7290/ijns060208>.

CLIMATE CHANGE

NEWS & COMMENTARIES

Climate change replaces pandemic as insurers' biggest worry

Climate change has returned to the top of the list of insurers' biggest concerns as the vaccine roll-out and gradual lifting of health restrictions see pandemic fears ease in many countries. Global warming was ranked as the biggest risk to society over the next five to 10 years.

Alexandre Rajbhandari

Bloomberg

29 September 2021

Climate change: Don't sideline plastic problem, nations urged

Scientists are warning politicians immersed in climate change policy not to forget that the world is also in the midst of a plastic waste crisis. They fear that so much energy is being expended on emissions policy that tackling plastic pollution will be sidelined.

Roger Harrabin

BBC

28 September 2021

PM Modi to launch flagship schemes today to make all cities 'garbage free', 'water secure'

The Swachh Bharat Mission-Urban (SBM-U) 2.0 and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) 2.0 are two flagship programmes to make all cities in India garbage-free and water-secure towards achieving 2030 sustainable development goals.

Joydeep Bose

Hindustan Times

1 October 2021

Defense department warns climate change will increase conflicts over water and food

Water shortages could become a primary source of friction or conflict between U.S. military overseas and the countries where troops are based.

Emma Newburger

CNBC

8 October 2021

Jakarta Bay, already polluted by plastics, has high levels of paracetamol harmful to marine life

This raises concerns about the environmental risks associated with long-term exposure and, especially, the impact on nearby shellfish farms habitats.

Aisyah Llewellyn

South China Morning Post

10 October 2021

Life below water

Tackling coral reef degradation requires an all-hands-on-deck approach. This means placing the health of our natural world at the heart of decision-making, so that social and economic systems demonstrate and uphold its intrinsic and extrinsic value.

The Straits Times

11 October 2021

SELECTED PUBLICATIONS

Global climate risk index 2021

Eight out of the ten countries most affected by the quantified impacts of extreme weather events in 2019 belong to the low- to lower-middle income category. Half of them are Least Developed Countries.

David Eckstein, Vera Künzel, and Laura Schäfe

Bonn/Berlin: Germanwatch e.V.

2021

Status of coral reefs of the world: 2020

Large scale coral bleaching events are the greatest disturbance to the world's coral reefs. Between 2009 and 2018, the world lost about 14% of the coral on its coral reefs. Almost invariably, sharp declines in coral cover corresponded with rapid increases in sea surface temperatures.

David Souter, et al.

Global Coral Reef Monitoring Network

2021

EVENTS & ANNOUNCEMENTS

The Water & Climate Pavilion

The activity aims to elevate ideas and solutions to the highest possible levels through a unified voice on the role of water in meeting the goals of the Paris Agreement and support ambitious and science-based global climate action.

Glasgow, the UK

31 October -12 November 2021

The 26th UN Climate Change Conference of the Parties (COP26)

The COP26 is aimed at securing global net zero by mid-century and keep 1.5 degrees C within reach, adapting to protect communities and natural habitats, mobilising finance, finalising the Paris Rule-book, and accelerating action to tackle the climate crisis through collaboration between governments, businesses and civil society.

Glasgow, the UK

31 October -12 November 2021

ENERGY SECURITY

NEWS AND COMMENTARIES

China needs coal, and Australia has it. But something's standing in the way

China needs to bolster its coal supply to avoid an economic slowdown this quarter, but Beijing's icy relations with Australia could make that difficult. China faces risks in procuring coal quickly due to a variety of constraints including logistics and regulations.

Saheli Roy Choudhury

CNBC

4 October 2021

Chinese coal prices hit record high and power cuts continue

Flooding in northern China has affected a major coal production centre hard, sending coal prices soaring and complicating efforts by Beijing to tackle ongoing power shortages.

Laura He

CNN

11 October 2021

Japan's new PM defends pro-nuclear stance in parliamentary debut

Japan's new prime minister, Fumio Kishida, defended his pro-nuclear energy policies, saying that re-starting nuclear power plants mothballed since the 2011 Fukushima disaster was vital.

Reuters

11 October 2021

China and India face a deepening energy crunch

Some leaders in India warned that key regions, including New Delhi, could face a "power crisis" as the cost of electricity rises, even as the central government claimed the country has enough coal supplies to meet demand. In China, power shortages are the result of a combination of factors, from China's post-pandemic construction boom, to its national push to reduce carbon emissions that led hundreds of coal mines to shut down or slash production earlier this year.

Laura He and Manveena Suri

CNN

12 October 2021

World must triple clean energy investment by 2030 to curb climate change: IEA

Investment in renewable energy needs to triple by the end of the decade if the world hopes to effectively fight climate change and keep volatile energy markets under control. The world is not investing enough to meet its future energy needs

Reuters

The Straits Times

13 October 2021

China puts energy security first while doubling down on renewables

President Xi Jinping and Premier Li Keqiang painted a portrait of a country that plans to put national security — including from energy shortages — and development first, even as it pursues a green transition.

Bloomberg News

12 October 2021

SELECTED PUBLICATIONS

World energy outlook 2021

In the run-up to a crucial COP26 meeting in Glasgow, this report provides a detailed picture of how far countries have come in their clean energy transitions, and how far they still have to go. A new global energy economy is emerging, but will need to take shape much more quickly to avoid severe impacts from a changing climate.

International Energy Agency

Paris: IEA

2021

Country nuclear power profiles

This publication compiles background information on the status and development of nuclear power programmes across participating International Atomic Energy Agency (IAEA) Member States.

International Atomic Energy Agency

Vienna: IAEA

2021

EVENTS & ANNOUNCEMENTS

ACE-IAEA Cooperation in Civilian Nuclear Energy

The aim of this webinar was to inform stakeholders of the ASEAN member states about the launch of ASEAN Centre for Energy and IAEA cooperation together with the planned ASEAN-wide nuclear cooperation activities and up-to-date global nuclear situation. Emerging nuclear power technologies were also discussed.

Recorded Webinar

7 October 2021

World Energy Outlook 2021: Launch Event

This served as a virtual launch of the World Energy Outlook (WEO), the energy world's most authoritative source of analysis and projections. WEO 2021 is designed to serve as a handbook for the COP26 Climate Change Conference in Glasgow.

Recorded Webinar

13 October 2021

FOOD SECURITY

NEWS & COMMENTARIES

China warns on food security as coal crunch hits fertilizers

According to China's National Development and Reform Commission, fertilizers are important for agricultural production and maintaining food security. However, the global "coal crunch" of skyrocketing energy prices has started to impact Urea-based fertilizer prices in China, rising more than 50% since January 2021.

Jasmine Ng
Bloomberg News
23 September 2021

New Dubai genomic research hub to boost the UAE's food security ambitions

Dubai is now among the agile frontrunners, globally and in the UAE, in serving the needs of both public and private entities in fast-tracking the discovery and development of food and other crops suited to marginal environments. Its new genomic research hub is expected to include whole genome resequencing, genotyping-by-sequencing, metagenomics and transcriptomics.

Arabian Business
30 September 2021

Food safety first: China issues guidelines for near-expired foods after anti-waste law boosts sales

China's recently-implemented anti-food waste law has led to an increase in food sales, as a result of the lower prices of these products which are popular among the youth. To prevent this from creating new food safety risks, the government has followed this up with formal food safety and consumption guidelines for near-expiry products, encouraging only formal, licensed retail outlets.

Pearly Neo
Food Navigator Asia
6 October 2021

Why India's ambitious ethanol plan is spurring food security fears

Critics are arguing that India's green push to invest government resources into doubling India's production of ethanol as a substitute for coal, can lead to diverting crops away from food consumption. It also means funnelling away money that could have been spent to subsidise the food for over the 209 million citizens which represent 15% of its population, and greater strain on groundwater resources.

Bloomberg
The Indian Express
7 October 2021

Inflation will continue unabated till April: PM aide

While Pakistan hopes that farmers would be able to achieve a 16% increase in grain production by 2022, its Special Assistant to the Prime Minister (SAPM) on National Food Security has cautioned that food prices would continue to increase until April 2022. This is partly a result of overcharging for food products, a crime for which involved retailers have already been arrested.

Dawn
10 October 2021

Local production of fish, veggies in S'pore fell last year amid Covid-19 pandemic

Declining demand and sales for fish and vegetables have caused disruptions upstream, through declining production levels in local farms in Singapore. Nonetheless, local farmers have contributed significantly to maintaining food security amid the Jurong Fishery Port closure in July.

Audrey Tan
The Straits Times
11 October 2021

SELECTED PUBLICATIONS

Global assessment of the impacts of COVID-19 on food security

This study finds that no major global food shortage has occurred as a result of COVID-19, although the food system nonetheless suffered from disruption in upstream supply chain (e.g. fertilizer) and subsequent effects on prices or quantity/accessibility/quality of inputs. Grocery stores and supermarkets made billions of dollars in profits in 2020.

Christophe Béné et al.
Global Food Security Volume 31
2021

Community gardens: A "fourth basket" in Singapore's food story?

This policy report proposes that community gardens have the potential to be a reliable basket that adds to Singapore's food supplies through digital technologies. It also raises challenges faced by community farmers in marketing their products, and in boosting productivity levels.

Jose Ma. Luis Montesclaros and Paul S. Teng
RSIS Policy Report, Singapore: S. Rajaratnam School of International Studies.
2021

EVENTS & ANNOUNCEMENTS

Paving the way for youth-led action for climate adaptation in food systems

This Consultative Group on International Agricultural Research (CGIAR) webinar discussed the role of the youth in addressing climate challenges which have important food security impacts in future generations. This proposes to engage and involve the youth in fields related to climate change, agriculture and food security, empowering them to take the centre-stage in development.

Recorded Webinar
30 September 2021

Food security and the role of technology

Professor Paul S. Teng delivered a talk to engineering students at the National University Singapore as part of a Guest Lecture Series for NUS ME6501. This talk provided an overview of technological innovations in agri-food systems to meet the growing demand for food.

Recorded Webinar
3 October 2021

HEALTH SECURITY

NEWS & COMMENTARIES

'Spillover' diseases are emerging faster than ever before—thanks to humans

History is pockmarked with the scars of past zoonotic outbreaks. What have we learned, why are they increasing, and what can we do to avoid them?

Sharon Guynup

National Geographic

6 October 2021

Covid 'still running rampant' worldwide, warns creator of Oxford vaccine

Coronavirus is "still running rampant" worldwide and the failure to ensure poorer countries can access vaccines risks more deaths and the emergence of potentially dangerous new variants.

Andrew Gregory

The Guardian

6 October 2021

Coronavirus report warned of impact on UK four years before pandemic

Report from planning exercise in 2016 alerted government of need to stockpile PPE and set up contact tracing system.

Robert Booth

The Guardian

7 October 2021

Covid-19 boosters only for small groups, not time for all yet: WHO chief scientist

A COVID-19 vaccine booster dose is not yet required for all, although it can restore vaccine effectiveness for some people such as the elderly, says the World Health Organisation's (WHO) chief scientist.

Joyce Teo

The Straits Times

7 October 2021

Ivermectin: How false science created a Covid 'miracle' drug

Ivermectin has been called a COVID-19 "miracle" drug, championed by vaccine opponents, and recommended by health authorities in some countries. However, the health authorities in the US, UK and EU have found there is insufficient evidence for using the drug against COVID-19.

Rachel Schraer and Jack Goodman

BBC

7 October 2021

NUS, NTU scientists and doctors develop new way to detect COVID-19 viral RNA in the air

Scientists and doctors from the National University of Singapore and Nanyang Technological University have developed a way to detect SARS-CoV-2 RNA in the air in indoor settings.

Ang Hwee Min

The Straits Times

8 October 2021

SELECTED PUBLICATIONS

Call for emergency action to limit global temperature increases, restore biodiversity and protect health

The greatest threat to global public health is the continued failure of world leaders to keep the global temperature rise below 1.5 °C and to restore nature. Urgent, society-wide changes must be made and will lead to a fairer and healthier world.

Lukoye Atwoli et al.

Bulletin of the World Health Organization, Vol. 99, No. 10
2021

Tracking development assistance for health and for COVID-19: A review of development assistance, government, out-of-pocket, and other private spending on health for 204 countries and territories, 1990–2050

This article aims to put development assistance for health for COVID-19 in the context of broader trends in global health financing, and to estimate total health spending from 1995 to 2050 and development assistance for COVID-19 in 2020.

Angela E Micah et al.

The Lancet, Vol. 398, No. 10308

2021

EVENTS & ANNOUNCEMENTS

DX4Resilience Webinar: Managing Systemic Risk during COVID-19

Governments across the world are facing the challenge of understanding and addressing systemic risk, particularly due to the cascading effects of COVID-19.

Recorded Webinar

5 October 2021

DASH Webinar: Artificial Intelligence in the Diagnosis and Prognosis of Covid-19

During the pandemic, AI prediction models were urgently needed to support medical decision-making. This webinar discussed research into the prediction models for diagnosis and prognosis of COVID-19.

Recorded Webinar

6 October 2021

HUMANITARIAN ASSISTANCE AND DISASTER RELIEF

NEWS & COMMENTARIES

Engaging with the industry: Integrating IHL into new technologies in urban warfare

Contemporary urban conflict demonstrates that more should be done to ensure that new weapons technologies incorporate additional measures to minimise civilian harm when deployed in urban environments.

Damian Copeland and Lauren Sanders
Humanitarian Law and Policy

7 October 2021

'Political will' needed to safeguard 82.4 million displaced – UNHCR protection chief

Governments must boost cooperation and redouble efforts if solutions for the millions of people uprooted by conflict and persecution worldwide are to be found, UNHCR's protection chief said.

UNHCR

7 October 2021

Japan disaster tech aims to solve water problems during crises

As climate change brings elevated risks of extreme weather events, companies in disaster-prone Japan are seeking business opportunities in providing unique solutions to water problems during disasters. Startups and small companies are finding a place to shine in this relatively niche area.

Rurika Imahashi

Nikkei Asia

7 October 2021

Unnatural disasters: India's environmental mismanagement

Disasters in India regularly cause loss of lives and property because of man-made reasons, which can be addressed with some cheap, easy and effective measures.

Tarun Shridhar

Fair Observer

7 October 2021

New insurance policy will protect up to 160,000 people in Senegal from drought

Start Network has signed a climate risk insurance policy that will protect up to 160,000 people in Senegal from the effects of drought. One of the first of its kind, the policy will enable aid agencies to offer life-saving support to people in Senegal as soon as a drought is predicted, helping to prevent famine.

Helen James

START Network

7 October 2021

Street-level maps to help plan for floods, disasters

A tool that generates street-level maps of areas with high flood risk promises to aid future disaster planning as climate change increases the frequency and intensity of extreme weather events.

Melanie Sison

SciDevNet

7 October 2021

SELECTED PUBLICATIONS

The compound impact of extreme weather events and COVID-19

This report examines how people across the world are coping with overlapping vulnerabilities. It also highlights the need to address both crises simultaneously as the COVID-19 pandemic has affected livelihoods across the world while also making communities more vulnerable to climate risks.

Dan Walton et al.

Geneva: International Federation of the Red Cross and Red Crescent Societies

2021

Humanitarian action and disaster risk reduction: 2020 annual report

This report looks into the key accomplishments UN Women achieved in 2020 in the areas of humanitarian action and disaster risk reduction in collaboration with UN and civil society partners.

UN Women

2021

EVENTS & ANNOUNCEMENTS

RSIS Webinar on "Non-Traditional Security Concerns in the New Normal : Part 2"

This webinar discussed the linkages between different NTS issues. Topics of discussion included regional responses to pandemics and disasters, as well as innovations in NTS governance, such as cash programming and remote working in emergency response.

Recorded Webinar

22 September 2021

How is Accountability Understood Among Different Humanitarian Actors?

This webinar examined understandings of accountability in the humanitarian sphere and in particular, the accountability mechanisms through which humanitarian actors operate.

Recorded Webinar

11 October 2021

MIGRATION

NEWS & COMMENTARIES

Confronting the long, uneven path to gender-based asylum in the US

Although women are allowed to be granted asylum on account of their gender in the US, there is no recognition of gender as a particular social group in need of protection. This means that there are no clear codified rules for women fleeing gender-based violence.

Meredith Lawrence
The New Humanitarian
 21 September 2021

The educated refugee woman. An emerging resettlement category?

The mass evacuations in the wake of the Taliban takeover of Afghanistan has placed an international spotlight on the "skilled refugee woman" as a particular resettlement category. This highlights the role now played by gender in discussions of resettlement, 'brain save' and multilateral resettlement cooperation.

Kristin Bergtora Sandvik, et al.
Norwegian Centre for Humanitarian Studies
 21 September 2021

Extreme weather events in India made women, children more vulnerable to modern slavery, flags report

Forced labour and human trafficking are on the rise in India and other countries. As a result of climate change-induced extreme weather events, women, children and minorities are particularly vulnerable after displacement and loss of their livelihoods.

Kiran Pandey
DownToEarth
 21 September 2021

New IOM toolkit offers key advice on migrant centres

Launched in September 2021, the International Organization for Migration's new toolkit offers governments and non-government stakeholders key knowledge and resources on how best to set up and manage migrant centres.

International Organization for Migration
 28 September 2021

For Bangladesh's climate migrants, pandemic job cuts fuel 'multiple crises'

For climate migrants from regions grappling with climate change, job cuts due to COVID-19 are having a higher impact on their stress levels as compared to others moving from environmentally stable regions. Aside from the financial insecurity, they also have to deal with dangers posed by natural disasters.

Nimul Karim
Thomson Reuters Foundation News
 2 October 2021

On the economic geography of climate change

A crucial aspect of human adaptation to climate change is the need for geographic mobility. Any limitations set on such mobility will invariably worsen the already significant socioeconomic costs of climate change.

Giovanni Peri and Frédéric Robert-Nicoud
VOX EU
 11 October 2021

SELECTED PUBLICATIONS

The future of diasporas

This publication aims to improve understanding of and investment in diaspora communities. It studies ways to improve engagement with these communities and strengthen transnational engagement so as to contribute to sustainable development.

International Organization for Migration
 2021

PACE report on climate and migration

This report studies the adverse impact of climate change on living conditions of millions of people. Effects of climate change include rising sea levels, worsening desertification, lack of drinking water, and other environment-related threats which may also give rise to competition for access to resources.

Pierre-Alain Fridez
Parliamentary Assembly, Council of Europe
 2021

EVENTS & ANNOUNCEMENTS

How Will the Pandemic Reshape Public Health for Migrants?

This webinar featured experts in the field to discuss the impact of the pandemic on migrants. By reflecting on the implications of the public health crisis for migrant health, they assessed strategies to ensure migrant health after the pandemic.

Recorded Webinar
 14 September 2021

Paradoxes of Protection: The Afghan Case

This webinar will look at the Afghan protection paradox that has emerged from the recent Taliban takeover in Afghanistan. It will bring together a panel of experts to discuss these implications for humanitarian action and geopolitics.

Online Webinar
 25 October 2021