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April 2021



World Health
Organization

SME's in Bangladesh

WASME is one of the most representative, effective and leading international non-governmental organizations engaged in the promotion of MSMEs worldwide. WASME works closely with MSME experts in different parts of the world and also enjoys consultative/Observer status with concerned agencies in UN system such as UNCTAD, ITC, WIPO, UNIDO, UNESCO, UNCITRAL, UNESCAP and ILO, and several other inter-governmental and international organizations.

Since its inception in 1980, as the global voice of SMEs, WASME is actively engaged in crafting the Development agendas for SMEs, advocating for their greater recognition and enabling them to effectively contribute to the economic prosperity and social well being of their respective country.

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Our monthly Newsletter “World SME News” featuring developments in MSME sector



around the world and fortnightly “SME e-Bulletin” are the special purpose vehicle for information dissemination that empowers SMEs with right knowledge and experience.

With our members, permanent representatives, senior advisors, associates and SME Experts in different countries worldwide, we are unceasingly strengthening international cooperation, building linkages with governments bodies, SME associations, Chamber of Commerce, institutions of different countries to enable sound macroeconomic policies, capability of stakeholders to develop conducive business environments, regulatory frameworks, good governance for SMEs.



FROM THE DESK OF SECRETARY GENERAL



April 2021 VOLUME 156

Research paper on “The Sustainability of Thailand's Protected-Area System under Climate Change authored by Nirunrut Pomoim , Robert J. Zomer , Alice C. Hughes and Richard T. Corlett focuses on protected areas are the backbone of biodiversity conservation but vulnerable to climate change. Thailand has a large and well-planned protected area system, covering most remaining natural vegetation.

In UN section, focus is on WHO. WHO began when our Constitution came into force on 7 April 1948 – a date we now celebrate every year as World Health Day. Their primary role is to direct and coordinate international health within the United Nations system. The main areas of work are health systems; health through the life-course; non communicable and communicable diseases; preparedness, surveillance and response; and corporate services.

In country focus section, our focus country is the Bangladesh. Small and medium enterprises have drawn a lot of interest among policy makers, academics, businessmen and people in general. There is a broad consensus that a vibrant SME sector is one of the principal driving forces in the development of the economy of Bangladesh.

In an interview with Qatar Airways Group CEO, H.E. Akbar Al Baker, for an interview on various topics. He has provided some good insights into the current climate of airline travel and operations. The chief of Qatar Airways is known for being outspoken and serious. I am glad I made him laugh on several occasions.

Entrepreneur of month , Rashmi Chandra who is the founder of Egyanam Technologies Private Limited fulfilled my dream of doing an MBA from XLRI Jamshedpur in 1994 and joined IFCI in project Finance. Marriage and raising a Family required flexibility in my Workload and Timings. I quit IFCI in 1999 to start my entrepreneurial journey with Stratin InfoServe, a Consulting organisation in the then called Information Security Sector working actively till 2007.

WASME CORNER covers event and activities by WASME recently. Intellectual Property Enforcement and Startup events.

In UN News Scan, we have included the news of Japan supports ten UNIDO projects with US\$7.29 million.

In start-up section, the focus news are This startup reduced time taken to compost food from 2 years to 24 hours and Five Indian Startups Making Earth Greener.

Women's wing section we have added news related to Funding black female entrepreneurs are crucial to SA's startup growth and Women-led startup develops low cost bandwidth.

DR GYAN PRAKASH AGARWAL

Editor-in-Chief

Dr. Gyan Prakash Agarwal
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reader's review



Research paper on “Perception towards Online Teaching-learning in Medical Education among Medical Students during COVID-19 Outbreak in Nepal: A Descriptive Cross sectional Study” authored by Rakesh Singh,1 Madhusudan Subedi,1 Smriti Pant,1 Pragya Rai, has objective to describe the perception of medical students towards online teaching-learning introduced during the COVID-19 outbreak in Nepal

Selina Ved
Ontario, Canada

In UN section, ILO which is the only tripartite U.N. agency, since 1919 the ILO brings together governments, employers and workers of 187 member States, to set labour standards, develop policies and devise programmes promoting decent work for all women and men is doing very important work for the development of societies across world.

Aabeddin Mehnaz
Abuja, Nigeria

In country focus section, the story of the Bangladesh. SMEs which occupy an important position in the national economy and account for about 45 percent of manufacturing value addition, about 80 percent of industrial employment, about 90 percent of total industrial units and about 25 percent of the labor force and total contribution to export earnings varies from 75 percent to 80 percent is commendable.

Thomas K Raju
Kochi, India

WASME 's events and activities recently like International Women's Day was celebrated at World Association for Small and Medium Enterprises (WASME) on Friday, 8th March, 2021 was to felicitate women's contribution as “Aatmanirbhar Bharat – Self Reliance”. More than 100 women participants included entrepreneurs, social workers CEOs, Doctors, Lawyers, Academicians, Beauticians, Physiotherapists participated in the event. About 50 women entrepreneurs were awarded for their achievements and contribution in various fields is credible and achievements.

Michael Anthony
Yangon, Myanmar

The Sustainability of Thailand's Protected-Area System under Climate Change

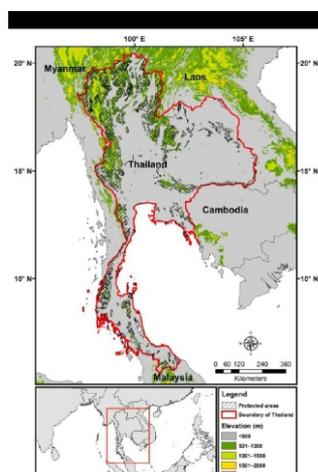
Nirunrut Pomoim ^{1,2}, Robert J. Zomer ³, Alice C. Hughes ^{1,4} and Richard T. Corlett

Abstract: Protected areas are the backbone of biodiversity conservation but vulnerable to climate change. Thailand has a large and well-planned protected area system, covering most remaining natural vegetation. A statistically derived global environmental stratification (GENS) was used to predict changes in bioclimatic conditions across the protected area system for 2050 and 2070, based on projections from three CMIP5 earth system models and two representative concentration pathways (RCPs). Five bioclimatic zones were identified composed of 28 strata. Substantial spatial reorganization of bioclimates is projected in the next 50 years, even under RCP2.6, while under RCP8.5 the average upward shift for all zones by 2070 is 328-483 m and the coolest zone disappears with twomodels. Overall, 7.9-31.0% of Thailand's land area will change zone by 2070, and 31.7-90.2% will change stratum. The consequences for biodiversity are less clear, particularly in the lowlands where the existing vegetation mosaic is determined largely by factors other than climate. Increasing connectivity of protected areas along temperature and rainfall gradients would allow species to migrate in response to climate change, but this will be difficult in much of Thailand. For isolated protected areas and species that cannot move fast enough, more active, species-specific interventions may be necessary.

1. Introduction

Protected areas are the backbone of global biodiversity conservation, as well as making a major contribution to the provision of key ecosystem services, including carbon sequestration, erosion control, the supply of clean water, and ecotourism. Protected areas are fixed in place, however, and thus vulnerable to anthropogenic climate change,

which may make some or all of the protected area unsuitable for some of the species at which it is targeted. Despite this vulnerability, there is evidence that protected areas can act as a buffer against some of the detrimental effects of climate change. Moreover, protected areas and protected-



area systems can be managed in ways that reduce these impacts. A recent study suggested that expanding the proportion of the total protected land area to 30% (from c. 15% currently), coupled with limiting global warming to 2 °C, would

more than halve tropical extinction risks. The current working version of the Convention on Biological Diversity's post-2020 framework, due to be confirmed at a meeting in China in 2021, includes 30% as a draft target. If this ambition is to be achieved, however, and is to be effective in conserving biodiversity, we need to understand how protected areas will be impacted by climate change in the coming decades and how these impacts can be reduced.

Thailand is at the center of Southeast Asia and is bordered by Laos, Cambodia, Myanmar, and Malaysia (Figure 1). The total land area is 517,624 km², ranging in altitude from 0 to 2564 m above mean sea level. The climate is tropical, with distinct wet and dry seasons associated with the Asian summer and winter monsoons, respectively. Biogeographically, most of the country is part of the Indochinese subregion, with the southern part of the peninsula in Sundaland.

Forests of various types cover at least 31% of the country's total area. Thailand is entirely within the Indo-Burma biodiversity hotspot, and it has been estimated that it supports 10% of the world's described vertebrate species and at least 5% of described vascular plants. Until the 1990s, deforestation and forest degradation made a significant contribution to Thailand's greenhouse gas emissions, but they have decreased substantially since then, and these emissions are now more than offset by uptake from plantations. Despite this, protecting and rehabilitating forests is still an important component of Thailand's overall climate change mitigation and adaptation strategy, as set out in its Third National Communication to the UNFCCC.

Thailand's protected-area system (Figure 1) was started in 1962. The gazetted protected areas in 2020 consist of 132 National Parks, 60 Wildlife Sanctuaries, and 80 Nonhunting Areas, as well as 114 Forest Parks, 13 Botanical Gardens, and 55 Arboreta. Currently, the Department of National Parks, Wildlife, and Plant Conservation (DNP) is in the process of establishing at least 23 additional National Parks and 7 Non-hunting Areas. In total, these protected areas cover approximately 118,320 km² or 22.8% of the country's land area, making Thailand one of the relatively few tropical countries that has achieved the CBD's 2020 area target (Aichi target 11) of 17%. The Thai government aims to increase this to at least 25% of the country by 2025. The existing protected areas are distributed among the regions, but they are mainly in the north and the west of the country, with few in the densely populated center and east. Despite the large total area, some lowland ecosystems are not adequately represented at present (i.e., peat swamp forest, mangrove forest, and lowland

deciduous forest), and Thailand's protected areas are relatively fragmented. Only 8% are >1000 km² and are considered to have the potential to maintain large mammal populations, especially tigers, leopards, and elephants. About 54% are 100-500 km², and 38% are <100 km². Ideally, conservation planning would be based on a comprehensive knowledge of the distribution of wild species in the area of concern. Thailand has relatively good biodiversity data by tropical standards, but knowledge of hyperdiverse tropical systems is always incomplete; therefore, that planning must be based on a few relatively wellstudied taxa: typically, birds, medium and large mammals, and trees. In this paper, we therefore use a statistically derived bioclimatic stratification as a proxy for biodiversity distributions, including the distributions of the numerous species for which little or no data exist. Climate per se is not a direct target for conservation, and not the only determinant of distributions, but this allows for a uniform approach that can be applied to the whole country. Moreover, the Royal Forest Department of Thailand has recently mapped the vegetation of the country at 1:50,000, using Sentinel-2 and Landsat 8 images from 2018 and extensive ground checking. It is thus possible to compare the physical map of climate types with an independently derived vegetation map to assess the importance of climate as a driver of vegetation patterns and also to identify potential threats from climate change to habitat availability.

The main objectives of this study were therefore as follows:

1. To assess the spatial patterns of climate change projected for Thailand by 2050 and 2070.
2. To produce a bioclimatic stratification for the present climate of Thailand and the

projected climates for 2050 and 2070.

3. To assess the ability of the existing protected-area system to represent the climate types currently present in Thailand.

4. To assess the impacts of the projected climate change by 2050 and 2070 on the representation of climate types within the protected-area system and in individual protected areas.

5. To assess the usefulness of climate as a proxy for biodiversity and identify the potential impacts of climate change on the protection of biodiversity in a protected-area system.

2. Materials and Methods

We used a geospatial modeling approach based upon the global environmental stratification (GEnS) to analyze the projected distribution of bioclimatic conditions within Thailand by the years 2050 and 2070. A similar approach has previously been used in Yunnan, China [1], in the transboundary Kailash Sacred Landscape of China, India, and Nepal, as well as in Myanmar. We used GEnS v. 1, which characterizes recent conditions based on high-resolution geospatial monthly climate datasets averaged from 1960 to 2000. The GEnS classifies the world's land surface into 125 relatively homogeneous bioclimatic strata, aggregated into 18 zones: the zones have descriptive names (written with uppercase initial letters to avoid confusion with other descriptions), and the strata each have unique alphanumeric codes. We used a multivariate analysis (the maximum likelihood classification algorithm in ArcMap 10.5) to cluster the statistical signature profiles of the original GEnS strata to be the bioclimatic stratification for Thailand, based upon the WorldClim V.1.4 dataset, which is the current climate condition. We reconstructed from raster format to perform spatial analyses

with a GIS. We used the Delta method [19] to downscale to 1000 m² resolution [15,20], because this is intermediate in scale between the fine resolution of the topographic maps and the coarse resolution of the climatic variables and corresponds to the minimum mapping unit of the vegetation-type map used in this study.

The method used to develop the stratification of current conditions was also used for predicted future climate conditions. Climate projections for the years 2050 (averaged over 2041-2060) and 2070 (average over 2061-2080), also obtained from WorldClim, were chosen to represent a short- to medium-term time frame relevant to the needs of ecosystem managers, planners, and other policy and decision makers. We developed the stratification based upon predicted future climate conditions using three earth system models (HadGEM2-ES, CNRM-CM5, and GFDL-CM3), previously used in Southeast Asia, to create climate predictions under two representative concentration pathways, RCP2.6 and RCP8.5, representing low and high greenhouse-gas concentration scenarios, respectively [21]. RCP2.6 is consistent with the Paris Agreement's 2 °C global warming target.

3. Results

3.1. Projected Climate Change for the Whole of Thailand The baseline mean annual temperature for Thailand (1960-2000) was 26.1 °C, mean maximum temperature of the warmest month was 34.9 °C, and mean annual precipitation was 1498mm (Table 1). All projections for the future show a continuation of recent warming trends (Table 1; Figures S1-S4). By 2050, the projected increase in mean annual temperature is 1.1-1.9 °C under RCP2.6 and 1.7-3.1 °C under RCP8.5. The increase is greatest in the

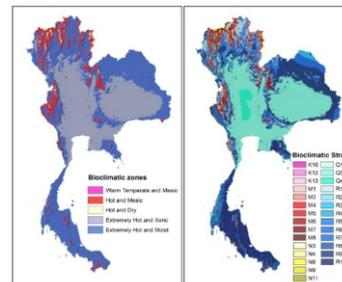
northern parts of Thailand, approaching and exceeding 3.0 °C under RCP8.5 with GFDLCM3 and HadGEM2-ES. By 2070, the projected increase is 1.2-2.1 °C under RCP2.6 and 2.6-4.5 °C under RCP8.5, approaching and exceeding 4.0 °C under RCP8.5 with GFDL-CM3 and HadGEM2-ES. Projected increases in maximum temperature of the warmest month are similar: 0.9-1.8 °C under RCP2.6 and 1.4-3.0 °C under RCP8.5 by 2050, and 0.7-2.1 °C under RCP2.6 and 2.6-4.4 °C under RCP8.5 by 2070. Projected mean annual precipitation (Table 1; Figures S5 and S6) shows a wider spread between the models. CNRM-CM5 and GFDL-CM3 project increases of 3.5-4.8% under RCP2.6 and 1.3-6.4% under RCP8.5 by 2050 and increases of 3.1-7.2% under RCP2.6 and 6.4-7.7% under RCP8.5 by 2070. By contrast, HadGEM2-ES projects decreases of 1.8% under RCP2.6 and 8.8% under RCP8.5 by 2050 and 2.6% under RCP2.6 and 8.4% under RCP8.5 by 2070. Note, however, that all these projected changes in precipitation are small compared with both current interannual variation and longer-term tree-ring oxygen isotope records.

Table 1. Mean annual temperature, maximum temperature of the warmest month, and precipitation averaged for the years 1960-2000 and projected for 2050 and 2070 with three ESMs under two representative concentration pathways (RCPs).

Year/RCP	Model	Mean Annual Temperature (°C)			Maximum Temperature (°C)			Mean Annual Precipitation (mm)		
		Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
1960-2000		26.1	14.8	28.9	34.9	24.3	39.2	1498	856	4458
2050 RCP2.6	CNRM-CM5	27.2	15.9	29.9	35.8	25.1	40.2	1570	917	4546
	GFDL-CM3	28.0	16.7	30.6	36.6	26.1	40.9	1550	846	4512
	HadGEM2-ES	28.0	16.8	30.5	36.7	26.0	41.0	1471	868	4412
RCP8.5	CNRM-CM5	27.8	16.5	30.5	36.3	25.7	40.4	1594	907	4699
	GFDL-CM3	28.8	17.6	31.4	37.7	26.9	42.2	1518	780	4615
	HadGEM2-ES	29.2	18.0	31.4	37.9	27.2	41.9	1367	790	4069
2070 RCP2.6	CNRM-CM5	27.3	16.0	30.0	35.6	25.0	39.7	1545	824	4487
	GFDL-CM3	28.2	17.0	30.8	36.9	26.1	41.2	1606	892	4547
	HadGEM2-ES	28.1	16.8	30.5	37.0	26.2	41.0	1459	874	4371
RCP8.5	CNRM-CM5	28.7	17.4	31.2	37.5	26.6	41.8	1594	868	4720
	GFDL-CM3	30.0	18.7	32.7	38.3	27.8	42.6	1614	846	4600
	HadGEM2-ES	30.6	19.4	32.9	39.3	28.3	43.2	1372	844	4091

3.2. Bioclimate Stratification of Thailand under Current Conditions

The environmental stratification of Thailand identified five bioclimatic zones composed of 28 strata (Figure 2; Table 2; Table S1). The lowlands include two zones: Extremely Hot and Moist, composed of 10 strata and comprising 51% of the total land area, and



Extremely Hot and Xeric, with three strata and comprising 39%. These two zones are distinguished by rainfall. Above the lowlands are decreasing areas

of Hot and Mesic (seven strata, 8.5%), Hot and Dry (five strata, 1.1%), and, on the highest peaks, Warm Temperate and Mesic (three strata, <0.1%) zones. Mean annual temperatures of zones and strata decline consistently with their mean elevations, but there is no simple trend in precipitation.

3.3. Projected Changes in Bioclimates by 2050 and 2070

By 2050, substantial changes are projected in both the areal extent and the average

Table 2. Characteristics of the bioclimatic zones based on climate data from 1960 to 2000, showing the area, mean elevation, mean annual temperature, maximum temperature of the warmest month, and mean annual precipitation.

Bioclimatic Zone	Avg (km ²)	Mean Elevation (m)	Mean Annual Temperature (°C)	Maximum Temperature (°C)	Mean Annual Precipitation (mm)
Warm Temperate and Mesic	83	1964	16.9	26.9	1325
Hot and Dry	5818	1343	20.6	30.8	1232
Hot and Mesic	43,791	868	23.0	32.7	1417
Extremely Hot and Moist	262,832	291	25.9	34.5	1686
Extremely Hot and Xeric	200,660	119	27.3	36.1	1275

elevation of the bioclimatic zones by all models and in both RCP scenarios (Figure S7; Table 3). Under RCP2.6, there is a large expansion in the extent of the Extremely Hot and Xeric zone (from 200,660 to 262,570-268,007 km²), which becomes the largest zone, while the areal extents of other bioclimatic zones decrease, particularly the three cooler zones. The overall average upward shift for all zones is 145-247 m. Under RCP8.5, by contrast, the Extremely Hot and Moist zone remains the largest using GFDL-CM3 and HadGEM2-ES, where it expands by 60,535-81,080 km², while the other zones all decrease, and the Warm Temperate and Mesic zone disappears from Thailand. However, the CNRM-CM5 model projects a large expansion in the extent of the Extremely Hot and Xeric (from 200,660 km²

to 243,051 km²), as under RCP2.6, and the Warm Temperate and Mesic declines greatly but does not disappear. The overall average upward shift for all zones under RCP8.5 is 206-326 m. Changes in the more narrowly defined strata are larger than in the zones, with the biggest expansions in Q4 and R7, respectively the warmest, lowest-elevation strata in the Extremely Hot and Xeric and Extremely Hot and Moist zones (Figure S8; Table S2). Several strata are lost from Thailand, but none are gained. Overall, 12.1-13.1% of the total area of Thailand changes zone under RCP2.6 by 2050 and 8.3-15.8% under RCP8.5, while 31.7-60.7% under RCP2.6 and 52.6-82.4% under RCP8.5 change stratum (Table S3). Projected changes by 2070 are generally in the same direction as for 2050, but larger (Figure S9; Table 4). Under RCP2.6, there is a large expansion in the extent of the Extremely Hot and Xeric zone and decreases in the other zones, except for the Extremely Hot and

Moist zone with GFDL-CM3, which shows a slight increase. The overall average upward shift for all zones is 151-278 m. Under RCP8.5, in contrast, the Extremely Hot and Moist zone expands with all models, while the Extremely Hot and Xeric zone declines. All other zones also decline, with the Warm Temperate and Mesic zone disappearing with GFDL-CM3 and HadGEM2-ES and reduced to only 2 km² with CNRM-CM5. The overall average upward shift for all zones is 328-483 m. Changes in bioclimatic strata are also similar but larger than those by 2050 and, again, several strata are lost, but none gained (Figure S10; Table S4). Overall, 7.9-13.9% of the total area of Thailand changes zone under RCP2.6 by 2070 and 11.1-31.0% under RCP8.5, while 31.7-63.6% under RCP2.6 and 71.4-90.2% under RCP8.5 changes stratum (Table S3).

3.4. Bioclimatic Conditions and Changes in the Protected Areas

Thailand's protected areas provide a fairly

Table 3. Projected change in areal extents and mean elevations of bioclimatic zones and their upward shifts by 2050 with three ESMs under two RCPs.

Bioclimatic Zone	Model	Area (km ²)		Area Change (km ²)				Elevation Shift (m)		
		Current	RCP		RCP		RCP		RCP	RCP
			2.6	8.5	2.6	8.5	2.6	8.5		
Warm Temperate and Mesic	CNRM-CM5		25	12	-58	-71	233	315		
	GFDL-CM3	83	4	0	-79	-83	410	-		
	HadGEM2-ES		8	0	-75	-83	281	-		
Hot and Dry	CNRM-CM5		1702	766	-4116	-3052	179	278		
	GFDL-CM3	5818	426	127	-3392	-3691	370	355		
	HadGEM2-ES		714	142	-5104	-5676	277	532		
Hot and Mesic	CNRM-CM5		18,140	10,690	-25,651	-33,101	207	319		
	GFDL-CM3	43,791	9005	3049	-34,786	-40,742	329	525		
	HadGEM2-ES		9390	2996	-34,441	-40,835	327	512		
Extremely Hot and Moist	CNRM-CM5		227,237	258,686	-35,115	-41,66	42	1		
	GFDL-CM3	262,852	240,582	343,932	-22,270	81,080	-12	-87		
	HadGEM2-ES		234,899	323,387	-28,343	60,835	-5	-90		
Extremely Hot and Xeric	CNRM-CM5		265,601	243,051	64,941	42,391	63	113		
	GFDL-CM3	200,660	262,570	165,479	61,910	-35,181	138	313		
	HadGEM2-ES		268,007	186,103	67,347	-14,537	129	293		
Average upward shift for all zones							CNRM-CM5: 145 GFDL-CM3: 247 HadGEM2-ES: 202			

Table 4. Projected change in areal extents and mean elevations of bioclimatic zones and their upward shifts by 2070 with three ESMs under two RCPs.

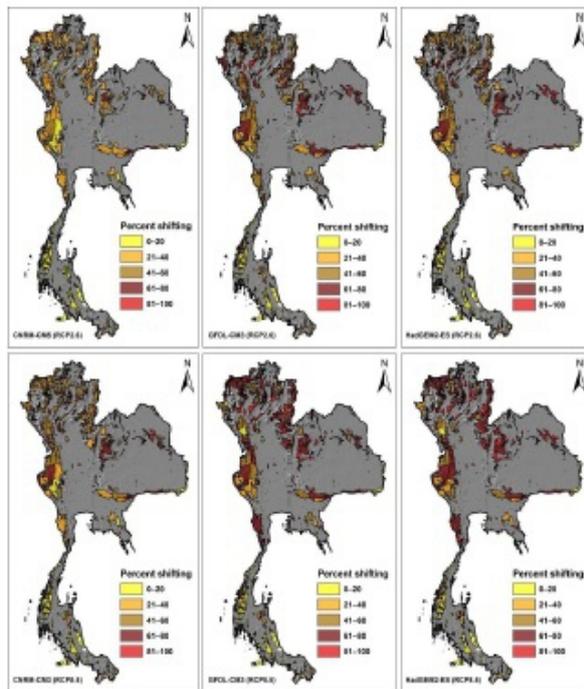
Bioclimatic Zone	Model	Area (km ²)		Area Change (km ²)				Elevation Shift (m)		
		Current	RCP		RCP		RCP		RCP	RCP
			2.6	8.5	2.6	8.5	2.6	8.5		
Warm Temperate and Mesic	CNRM-CM5		20	2	-63	-81	240	521		
	GFDL-CM3	83	3	0	-80	-83	303	-		
	HadGEM2-ES		8	0	-75	-83	281	-		
Hot and Dry	CNRM-CM5		1554	204	-4264	-5614	189	480		
	GFDL-CM3	5818	299	33	-5919	-5785	421	821		
	HadGEM2-ES		676	35	-5142	-5783	289	780		
Hot and Mesic	CNRM-CM5		16,917	4604	-26,874	-39,187	212	468		
	GFDL-CM3	43,791	8035	807	-35,796	-42,934	335	643		
	HadGEM2-ES		9153	326	-34,638	-41,250	333	578		
Extremely Hot and Moist	CNRM-CM5		222,317	320,005	-40,535	37,153	44	-62		
	GFDL-CM3	262,852	265,276	418,370	2424	155,518	-35	-93		
	HadGEM2-ES		231,781	422,099	-31,071	159,247	-8	-93		
Extremely Hot and Xeric	CNRM-CM5		271,780	187,773	71,120	-12,887	68	234		
	GFDL-CM3	200,660	238,974	93,327	38,314	107,333	166	543		
	HadGEM2-ES		270,970	89,918	70,310	110,742	133	566		
Average upward shift for all zones							CNRM-CM5: 151 GFDL-CM3: 278 HadGEM2-ES: 205			

Table 5. Current representation of bioclimatic zones within protected areas in Thailand.

Bioclimatic Zone	Total Area (km ²)	Area Protected (km ²)	% of Zone Protected	% of Total Area Protected	% Natural Vegetation Protected
Warm Temperate and Mesic	83	75	90	0	95
Hot and Dry	5818	4296	73	4	82
Hot and Mesic	43,791	29739	68	27	81
Extremely Hot and Moist	262,852	70152	27	63	72
Extremely Hot and Xeric	200,660	7079	4	6	39

good representation of the bioclimatic zones present in Thailand, except that the densely populated Extremely Hot and Xeric zone is greatly underrepresented (4% of the total area of this zone and 39% of the remaining natural vegetation) (Table 5). The three coolest zones are overrepresented in terms of percentage coverage (68-90% of total area and 81-95% of remaining natural vegetation) but not in terms of absolute area. In total, 63% of the area protected is in the Extremely Hot and Moist zone, 27% in the Hot and Mesic, 6% in the Extremely Hot and Xeric, 4% in the Hot and Dry, and <0.1% in the Warm Temperate and Mesic (Table 5).

Representation of strata varies greatly but all 28 are found in at least one protected area (Table S5).



Projected changes in climate within protected areas are similar to those for Thailand as a whole (Figure S11; Table S6). By 2050, under RCP2.6, areal representation of the Extremely Hot and Moist zone in protected areas decreases by 10.4-11.3% with GFDL-CM3 and HadGEM-ES but increases by 3.3% with CNRM-CM5, while with all three models, there is a large expansion in the extent of the Extremely Hot and Xeric zone in protected areas from 7079 to 24,871-42,348 km². All other zones decrease considerably, with the Warm Temperate and Mesic zone decreasing by 66.7-94.7% (from 75 to 4-25 km²). Impacts are greater under RCP8.5, with the Extremely Hot and Xeric zone increasing more than four-fold to 33,863-56,610 km² and all other zones declining. The Warm Temperate and Mesic zone disappears from

Thai protected areas (and Thailand) with GFDL-CM3 and HadGEM2-ES. Up to six strata are also lost from the protected-area system, depending on the model and RCP (Figure S13; Table S7). Under RCP2.6, 18.1-31.7% of all the area under protection is projected to shift to a different bioclimatic zone by 2070 and 26.5-44.5% to a new stratum, while under RCP8.5, 24.1-44.5% shifts to a new zone and 39.9-68.4% to a new stratum (Table S3).

The trends shown for 2050 continue and increase by 2070 (Figure S13; Table S8). Under RCP2.6, the Extremely Hot and Moist zone decreases by 11.8-12.2% with GFDL-CM3 and HadGEM-ES, while it increases by 1.5% with CNRM-CM5. The Extremely Hot

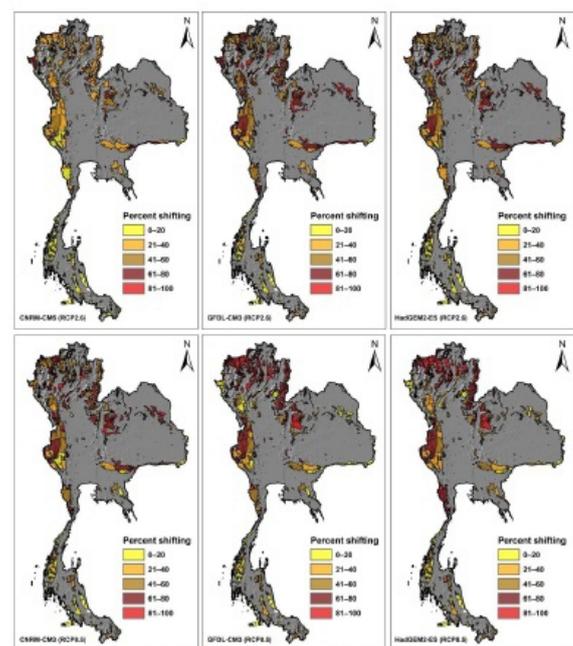


Figure 4. Percentage of each individual protected area shifting to a different bioclimatic zone by 2070 across three earth system models and two RCPs.

and Xeric zone increases in all models, by 19,957-36,782 km². All other zones decrease greatly, with the Warm Temperate and Mesic decreasing by 73.3-96%. Under RCP8.5, the Extremely Hot and Xeric zone increases by 38,406-40,178 km², while all

other zones decrease in all models, and the Warm Temperate and Mesic zone is lost, or almost lost, from Thailand's protected area system. Up to 10 strata are also lost from the protected-area system, depending on the model and RCP (Figure S14; Table S9). Under RCP2.6, 18.9-33.1% of all the area under protection is projected to shift to a different bioclimatic zone and 27.7-48.7% to a new stratum, while under RCP 8.5, 34.5-36.1% shifts to a new zone and 56.4-84.5% to a new stratum (Table S3).

Projected changes by 2070 are similar in spatial pattern to those by 2050. By 2070, 64-70% of all protected areas are projected to show shifts to a different bioclimatic zone under RCP2.6 and 66-72% under RCP8.5, while 5-13% of all protected areas shift completely to different zones under RCP2.6 and 5-18% under RCP8.5 (Figure 4; Table S11). For strata, 95-99% of all protected areas are projected to show some shifts under RCP2.6 and 99-100% under RCP8.5, while 20-40% under RCP2.6 and 46-68% under RCP8.5 are projected to shift completely to different strata (Figure S16; Table S11).

3.5. Bioclimates, Bioclimatic Change, and Vegetation

The bioclimatic stratification does not, in general, predict the current vegetation in Thailand (Table 6). This is consistent with the existence of a mosaic of distinct vegetation types in areas of apparently uniform climate, as shown in the 1:50,000 vegetation map and attributed in the literature to differences in soil, water availability, fire regime, and other past and present human impacts, including shifting cultivation. The exception is the Warm Temperate and Mesic zone, which is largely covered in hill evergreen forest.

This forest type also dominates the Hot and Dry zone, the next highest elevation, and is prominent in the Hot and Mesic zone. In lowland areas, deciduous dipterocarp forest, mixed deciduous forest, and dry evergreen forest form a mosaic over much of Thailand, while moist evergreen forest is largely confined to the wetter Extremely Hot and Moist zone. Grasslands, assumed to be secondary, occur in all zones, while "other natural vegetation", which includes mangrove, beach forest, freshwater swamp forest, and peat forest, are entirely lowland and mostly in the Extremely Hot and Moist zone.

Over the next 30-50 years, the existing vegetation within the protected areas will be impacted by the redistribution of bioclimatic zones described in the previous section. In the longer term, the vegetation types will also change, but over the next few decades climate will change more rapidly. The most dramatic changes will be in the areas currently within the three cooler zones, where expansion of the two Extremely Hot zones will impact the hill evergreen and pine forests (Figures S17 and S18). There will also be some expansion of the Extremely Hot and Xeric zone in lowland areas currently occupied by deciduous dipterocarp forest, mixed deciduous forest, and dry evergreen forest. However, these vegetation types already occur within this zone (Table 6), suggesting some degree of tolerance. The area currently occupied by moist evergreen forest, in contrast, shows relatively little change.

4. Discussion

Thailand has a relatively large and well-planned protected-area system, covering most of the remaining natural vegetation in the country. Most of the land area is in two "Extremely Hot" lowland bioclimatic zones,

with <10% in the remaining cooler, montane areas, although these zones retain more natural vegetation than in the lowlands. Natural habitats in all five zones and 28 strata identified in the bioclimatic stratification are represented in protected areas, and, in four out of the five zones, >70% of the remaining forest is protected. The exception is the Extremely Hot and Xeric zone, which dominates in the densely populated center

Table 6. The occurrence of major vegetation types within the current bioclimatic zones in Thailand.

Vegetation Type	Area (km ²)					Total Area of Type
	Warm Temperate and Moist	Hot and Dry	Hot and Moist	Extremely Hot and Moist	Extremely Hot and Xeric	
Hill evergreen forest	76	3856	10,435	3026	0	17,383
Pine forest	0	262	547	39	0	848
Deciduous dipterocarp forest	0	0	785	13,452	4757	18,094
Mixed deciduous forest	0	618	14,597	40,943	10,660	75,808
Dry evergreen forest	0	338	6300	13,280	2183	21,058
Moist evergreen forest	0	13	3793	14,732	35	18,553
Grassland	1	322	313	147	23	584
Other natural vegetation	0	0	0	2444	446	2890
Total natural vegetation	79	5169	36,738	97,863	18,089	157,138
Total area of zone	85	5619	43,771	262,652	200,660	
% of zone vegetated	95%	89%	84%	37%	9%	

and east of the country. Only 4% of this zone is protected and only 39% of its remaining forest. However, most of the currently unprotected forest in this zone—mostly deciduous dipterocarp forest and mixed deciduous forest—is highly fragmented, so opportunities for expanding protection without extensive ecological restoration are limited.

The earth system models used in this study all project an acceleration of recent warming trends across the whole of Thailand under both RCPs. In contrast, projected changes in the amount and spatial distribution of rainfall vary between models but are almost always small relative to current interannual and longer-term variability. The models predict a drastic spatial reorganization of the bioclimates by 2070 under the high-emission RCP8.5 scenario, but even under the Paris-compliant RCP2.6 low-emissions scenario the changes are still substantial. The hottest zones and strata are projected to expand, and all the cooler zones are projected to shrink, with large upward shifts for all zones by 2070. Up to 31% of Thailand's land area changes bioclimatic zone by 2070, depending

on the model and RCP scenario, while up to 90% changes stratum. Note, however, the significant variation between the projections from the three models and, moreover, that these models do not represent the full uncertainty in climate projections.

Understanding the consequences of these climatic changes for biodiversity is complicated by the existence, over much of lowland Thailand, of a mosaic of three structurally and floristically distinct forest types—deciduous dipterocarp forest, mixed deciduous forest, and dry evergreen forest. This pattern is not predicted by climate variables and has been attributed to spatial patterns in soil factors, water availability, fire regimes, and other past and present human impacts, particularly the legacy of shifting cultivation [23,24]. The relative importance of climate versus vegetation structure and floristic composition in determining the suitability of an area as habitat differs between taxa, but it seems likely that both will be important for many species. This, in turn, makes it difficult to predict the impacts of the projected climate change on the floras and faunas of lowland areas. Moreover, these forest types were broadly defined for the purpose of mapping from space, and there is considerable floristic variation within each type. In hill evergreen forest, in particular, few species are shared between the lowest and highest altitude stands.

An additional complication comes from the rising concentrations of carbon dioxide, already almost 50% above pre-industrial levels. This rise is not only the largest single driver of climate change but also has a direct impact on plant physiology and thus on growth, competition, and the resulting vegetation [25]. A recent study simulating the impacts of climate change on vegetation in South Asia with and without increasing CO₂ found that simulations with increasing CO₂

resulted in transitions from savanna into forest and deciduous forest into evergreen forest which did not occur in the absence of these increases [25]. The vegetation model used (aDGVM2) did not include nutrient limitation, meaning that the impacts of elevated CO₂ may have been overestimated, but woody invasion of savannas in other parts of the world has been attributed, in part, to this mechanism [26]. Canopy closure, in turn, suppresses the grasses on which large grazing mammals depend and reduces the ability of a protected area to support such species. Climate per se is likely to be most important at higher altitudes, where low temperatures increasingly limit survival and growth, and at the wetter end of the lowland rainfall spectrum, where drought-sensitive moist evergreen forest is important. Vegetation change will undoubtedly lag behind climate change but, at least in steep topography where dispersal distances are short, upslope dispersal of plants and animals from lower altitudes is likely to increase competition for montane taxa that are increasingly stressed by warming climates. Most of the 20 tree species studied in Natma Taung National Park in western Myanmar had a higher proportion of juveniles at the upper end of their ranges, suggesting that their populations will eventually shift upslope [27]. On isolated mountains this may result in mountain-top extinctions for the most sensitive taxa, and all plant and animal species currently found largely or only in the Warm Temperate and Mesic Zone in Thailand should be considered under threat.

The same approach, based on the global environmental stratification, was used in a recent study of Myanmar, which neighbors Thailand to the west and northwest [17]. This shows both similarities and significant

differences. Myanmar has a much greater diversity of bioclimatic zones and strata: nine zones and 41 strata, compared with only five zones and 28 strata in Thailand. This largely reflects Myanmar's greater latitudinal (9_280 to 28_290 N) and altitudinal (0-5881 m) spread. All the major vegetation types in Thailand are found in Myanmar, with additional types largely in northern Myanmar at higher latitudes and altitudes than occur in Thailand. The three cooler zones, which together occupy <10% of Thailand's land area, are much more extensive in Myanmar, yet equally vulnerable to climate change. Taxa that can disperse between isolated mountain peaks could potentially move north from Thailand into the more extensive upland forests in Myanmar in response to warming, but there are no continuous high-altitude corridors for species which cannot disperse across large gaps. Current plans to expand Thailand's protected-area coverage from 22.8% to 25.9% will be achieved by adding 15,796 km² of forest reserves, previously managed by the Royal Forest Department, to the protected-area system managed by the DNP. After this is completed, the opportunities for the creation of new protected areas and the expansion of existing ones in Thailand are limited, unless large-scale ecological restoration can be undertaken on degraded and agricultural lands. Although large, interconnected protected areas are rarely possible, the Department of National Parks, Wildlife, and Plant Conservation (DNP) has adopted the concept of "forest complexes", in which smaller protected areas can be linked by conservation corridors to support wide-ranging species. For mitigation of climate-change impacts, the most important connectivity is along temperature and rainfall gradients, so that the more-mobile species can escape warming and changes in

rainfall by shifting their ranges. Several of the existing forest complexes, including the 19,699 km² Western Forest Complex on the border with Myanmar, are aligned on a north-south axis, and will provide this capacity as connectivity is increased. Many species will probably not be able to track the rapid climate change projected for the next 50 years, however; in these cases, species-specific interventions will be necessary.

Potential interventions could include in situ support and "assisted migration" to other protected areas. Finally, given the uncertainties in both climate-change projections and biological responses, systematic monitoring of impacts at multiple representative sites is needed in order to guide management responses.

5. Conclusions

Thailand's protected-area system currently provides a good level of protection for most major ecosystems. Projected climate change over the next 50 years will result in a substantial spatial reorganization of the bioclimates even under RCP2.6. Threats to biodiversity are most likely for mountain-top endemics on isolated peaks, for the biotas of small protected areas, and those with a low elevational range, as well as, in combination with rising CO₂ levels, for species dependent on open habitats vulnerable to woody encroachment. Increasing connectivity along environmental gradients would help mitigate the impacts of climate change for well-dispersed species, but isolated protected areas and poorly dispersed species will probably need additional, species-specific, interventions.

Supplementary Materials: The following are available online at <https://www.mdpi.com/2071-1050/13/5/2868/s1>, Figure S1:

Change in mean annual temperature as projected for the year 2050 for three different earth system models under RCP2.6 and RCP8.5; Figure S2: Change in mean annual temperature as projected for the year 2070 for three different earth system models under RCP2.6 and RCP8.5; Figure S3: Change in maximum temperature of the warmest month as projected for the year 2050 for three different earth system models under RCP2.6 and RCP8.5; Figure S4: Change in maximum temperature of the warmest month as projected for the year 2070 for three different earth system models under RCP2.6 and RCP8.5; Figure S5: Change in mean annual precipitation as projected for the year 2050 for three different earth system models under RCP2.6 and RCP8.5; Figure S6: Change in mean annual precipitation as projected for the year 2070 for three different earth system models under RCP2.6 and RCP8.5; Figure S7: Bioclimatic stratification of Thailand based on spatially interpolated weather station data average from 1960 to 2000, and as projected by three earth system models under two RCPs for 2050; Figure S8: Bioclimatic strata within Thailand based on spatially interpolated weather station data average from 1960 to 2000, and as projected by three earth system models under two RCPs for 2050; Figure S9: Bioclimatic stratification of Thailand based on spatially interpolated weather station data averages from 1960 to 2000 and as projected by three earth system models under two RCPs for 2070; Figure S10: Bioclimatic strata within Thailand based on spatially interpolated weather station data average from 1960 to 2000 and as projected by three earth system models under two RCPs for 2070; Figure S11: Bioclimatic zones within protected areas in Thailand based on spatially interpolated weather station data average from 1960 to 2000 and as projected

by three earth system models under two RCPs for 2050; Figure S12: Bioclimatic strata within protected areas in Thailand based on spatially interpolated weather station data average from 1960 to 2000 and as projected by three earth system models under two RCPs for 2050; Figure S13: Bioclimatic zones of protected areas in Thailand based on spatially interpolated weather station data average from 1960 to 2000 and as projected by three earth system models under two RCPs for 2070; Figure S14: Bioclimatic strata of protected areas in Thailand based on spatially interpolated weather station data average from 1960 to 2000 and as projected by three earth system models under two RCPs for 2070; Figure S15: Percentage of each individual protected area shifting to a different bioclimatic stratum by the year 2050 for three earth system models and two RCPs; Figure S16: Percentage of each individual protected area shifting to a different bioclimatic stratum by the year 2070 for three earth system models and two RCPs; Figure S17: Percentage of each bioclimatic zone within each of the forest types found in the protected areas in Thailand as projected for the year 2050; Figure S18: Percentage of each bioclimatic zone within each of the forest types found in the protected areas in Thailand as projected for the year 2070; Table S1: Characteristics of the bioclimatic strata based on climate data from 1960 to 2000, showing the area, mean elevation, mean annual temperature, maximum temperature of the warmest month, and mean annual precipitation within Thailand; Table S2: Projected change in areal extent and mean elevation of bioclimatic strata in Thailand and their upward shifts by 2050; Table S3: Percentages of the total area of Thailand and the total protected area shifting to a different bioclimatic zone and stratum by 2050-2070; Table S4: Projected

change in areal extent and mean elevation of bioclimatic strata in Thailand and their upward shifts by 2070; Table S5: Representation of bioclimatic strata within protected areas in Thailand.

Table S14: Projected changes in the areal extent of bioclimatic zones in Non-hunting Areas in Thailand by 2050 and 2070.

Table S15: Projected changes in the areal extent of bioclimatic zones in Forest Parks in Thailand by 2050 and 2070; and Table S16: Projected changes in the areal extent of bioclimatic zones in proposed National Parks and Non-hunting Areas in Thailand by 2050 and 2070.

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Bangladesh

SME's in Bangladesh

Introduction

Small and medium enterprises have drawn a lot of interest among policy makers, academics, businessmen and people in general. There is a broad consensus that a vibrant SME sector is one of the principal driving forces in the development of the economy of Bangladesh. SMEs stimulate private ownership and entrepreneurial skills and can adapt quickly to changing market situation, generate employment, help diversified economic activities, and make a significant contribution to exports and trade. Therefore, policies and initiatives to develop SMEs and to increase their competitiveness are a priority for Bangladesh.

According to the Asian Development Bank, the SMEs in Bangladesh account for 70 to 80% of the non-agricultural sector employment. 40% of the manufacturing output is also by SMEs. Presently more than 6 million SMEs and micro-enterprises are operational in Bangladesh and they are constantly striving to upgrade the lives of many. (RRP Sector Assessment, ADB)

Objective

The study's prime objective is to understand how SME's work in the climate of Bangladesh and how the country is coping with post pandemic relief funds for those in need.

It also focuses on the issues raised by common business owners and sole proprietors and how or what measures could help the economy and it's backbone, i.e. the SME sector, help flourish.

SME's in Bangladesh

SMEs are defined with different parameters

and indicators by different countries/ international organizations. For example; Bangladesh used to define SMEs as "In manufacturing, small industry will be deemed to comprise enterprises with either the value (replacement cost) of fixed assets excluding land and building between Tk. 7.5 million and Tk. 150 million, or with between 31 and 120 workers. For services, 'small industry' will correspond to enterprises with either the value (replacement cost) of fixed assets excluding land and building between Tk. 1 million and Tk.20 million, or with between 16 and 50 workers". Similarly "In manufacturing, medium industry will be deemed to comprise enterprises with either the value (replacement cost) of fixed assets excluding land and building between Tk. 150 million and Tk. 500million, or with between 300 and 1000 workers. For services, 'medium industry' will correspond to enterprises with either the value (replacement cost) of fixed assets excluding land and building more than Tk. 300 million or more than 120 workers". Please note that, if on one criterion, a firm fall into the 'lower' category, while it falls into higher' category based on the other criterion, the firm will be deemed as in the 'higher' category.

In India small enterprises are defined as "a small enterprise where the investment in plant and machinery is more than fifty lakhs rupees but does not exceed ten crores rupees". Similarly medium enterprises are defined as "a medium enterprise where the investment in plant and machinery is more than ten crore rupees but does not exceed thirty crores rupees". In Pakistan, SMEs are defined as "enterprises having employment size is up to 250 or paid-up capital is up to Rs. 25 million or annual sales are up to Rs. 250 million".

Table 1: DEFINITION OF SMEs IN BANGLADESH

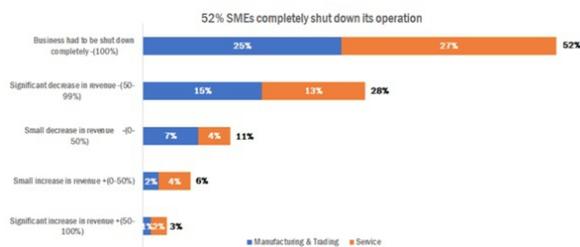
TYPE OF INDUSTRY		REPLACEMENT COST (EXCLUDING LAND AND FACTORY BUILDING COST)	NUMBER OF WORKERS EMPLOYED
Small industry	Manufacturing	BDT 7.5 million to 150 million	31 to 120
	Service	BDT 1 million to 20 million	16 to 50
Medium industry	Manufacturing	BDT 150 million to 500 million	121 to 300. But for RMG/labour intensive industries, not more than 1,000
	Service	BDT 20 million to 300 million	51 to 120

SOURCE: NATIONAL INDUSTRIAL POLICY 2016

Review of Literature

From the data available, it can be easily interpreted that both manufacturing and services sector have taken a big hit with regards to profits and unemployment. Even though the government of Bangladesh have provided its citizens with concessional loans but the fact that it is still a developing nation cannot go amiss.

The growth and survival of SMEs are threatened by impediments that may exist in the operations and management functional areas of the business. A number of studies have identified factors, such as inexperience in the field of business, lack of technical knowledge, poor managerial skills, lack of planning skills, and lack of market research skills, as the main challenges hindering the success of SMEs in developing countries (Baron & Shane, 2007).



The graph below depicts the aftershocks of the global pandemic that world is still fighting against, more than half of Bangladesh's SME's are on the verge of shutting down and the ones that are still operational have incurred mammoth losses. Only a total of 9%, including manufacturing trading and services, off the total enterprises

could muster up a revenue in the positive connotation. There has been zero output due to the unavailability of raw materials and next to zero cash reserves.

Country	Total Stimulus Package (USD)	Startups and/or SMEs (USD)	Package Type and Mechanism	Package Details
Bangladesh	10.9	2.35 BN	<ul style="list-style-type: none"> Concessional Loan Refinancing Loan Working Capital Finance 	The stimulus package caters to MSMEs, Low-income People, Farmers and Micro/Marginal business by varied type of schemes and financing.
India	34	13 BN (Proposed)	<ul style="list-style-type: none"> Refinancing Loan 3 month moratorium of loan repayments 	The primary focus has been to back workers in the informal sectors who have experienced a steep decline in income or have lost jobs.
Malaysia	47	2.31 BN	<ul style="list-style-type: none"> Working Capital Loan Refinancing Loan 	The declared amount will be available for early stage and growth stage Malaysian companies.
Indonesia	47	Included in the main package	<ul style="list-style-type: none"> Tax Relief Soft Loans 2-month moratorium on loan repayments 	The package provides a range of fiscal and non-fiscal incentives in addition to a special stimulus for startups and small and medium-sized (SMEs) businesses.
Thailand	46.3	15.4 BN (SMEs)	<ul style="list-style-type: none"> Soft Loans @ 2% with initial 6 months interest payment deferred 6 months loan payment holiday for SMEs & Tax Reliefs 	Package to support SMEs, specially tourism-related businesses, allowances worth USD 305 million is approved.

42% of enterprises have cut back their marketing expenditure while 23% have done the same in distribution. This implies businesses are taking initial cuts on these two fronts to save some funds. It is also worth mentioning that 32% of the enterprises operated on their own facility - hence did not incur any rental expenses. With respect to salary, 24% have cut down either to 0 or less than 10%. This indicates employees are already being laid off. This engenders concern as SMEs are one of the biggest employers in Bangladesh - they going down this route could end up with thousands of people becoming unemployed in a matter of months.

The above graph shows how the south Asian governments have helped their respective nations through these unprecedented times. India for example, introduced a 34 billion dollar stimulus to its citizens as the 5th largest economy still struggled to cope with the novel corona virus. Bangladesh, on the other hand, had allocated a total of Tk 93 thousand crores (USD 10.9 BN) as a stimulus package to revamp the economy.

Digital Supply Chain Management

Supply chains having web-enabled capabilities render enterprises the ability to source and sell on digital platforms. This not only increases the potential market by folds but also ensures a seamless transaction and traceability from the factory to the consumers' doorstep

Concessional financing

From the current international practices as well from our study we observed that 70% of the respondents asked for soft loans/working capital loans to survive the crisis. Banks and financial institutions may sanction up to BDT 25 lacs to women entrepreneurs against the personal guarantee. Entrepreneurs' credit limit may be ranged from BDT 50,000 to BDT 50 lacs.

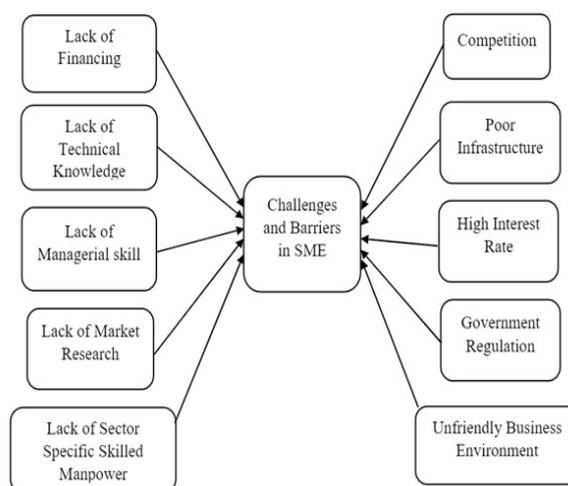
Tax reductions and grants

The government should be reducing the tax rate and offering grants to businesses in hard-hit sectors in an effort to help reduce costs and boost the bottom line. Moreover, specifically for SMEs, VAT exemption on revenue and expenses for current and next fiscal year, exemption [or deferral] of withholding tax payments can be a timely initiative. By lower/exempting tax and providing grants, the impact of plunging aggregate demand as a result of the recession could be minimized.

The World Bank's "Enterprise Growth and Bank Modernization Project" (EGBMP)

This project aimed to stimulate investments through small enterprises to offset employment losses from closed SOEs (for example, Adamjee Jute Mills). The Small Enterprise Fund included Tk 6 billion (US\$72 million equivalent) from the Bangladesh Bank, US\$10 million from the World Bank through the EGBMP, and Tk 0.6 billion

(US\$7.2 million) from the Government, for a total of Tk 1.2 billion (US\$14 million). The scheme was extended to banks and NBFIs at the bank rate against their financing to small entrepreneurs, and demonstrated high



market demand. Recovery against refinanced loans is used as a revolving fund for financing MSMEs. In this context, Tk 3.1 billion (US\$37 million) has been provided to 32 banks and NBFIs to support 3,160 enterprises on a revolving basis. Disbursement was completed in mid-2011 and, as of mid-2014, Tk 3.0 billion (US\$34.8 million) had been recovered.

Establish a multi-party central coordinating body to promote MSME development and financing

A pragmatic option would be to assign clear responsibilities among the two primary agencies for MSMEs. The SME Foundation under the Ministry of Industry would focus on research, overall development policy, and monitoring and evaluation. It will also be important to promote the formalization of MSMEs, adjust the policy to account for informal MSMEs, and simplify business procedures for MSMEs.

INTERVIEW With

H.E. AKBAR AL BAKER
CEO, QATAR AIRWAYS GROUP

Interview with Qatar Airways Group CEO, H.E. Akbar Al Baker, for an interview on various topics has provided some good insights into the current climate of airline travel and operations. The chief of Qatar Airways is known for being outspoken and serious.

Q: Will you eventually require all passengers to be vaccinated to fly with Qatar Airways?

Eventually, I think that it will be a mandatory requirement for many countries. For example, Australia will already not allow people that are not vaccinated to enter the country.



If this pandemic continues on in the same way, and if there is no proper robust treatment, I think many other countries will also require that you have a vaccination passport to enter their borders.

Q: Your airline has kept flying during the pandemic and even started launching new long haul destinations. Does all this make commercial sense?

I will always take every single opportunity I see. I have to find revenue for my airline and when everybody shuts their doors people will still want to travel and we are there to serve them. We carried 3.8 million passengers and we repatriated people when other airlines left their passengers stranded, we were there. We are very agile, resilient and business-focused.

Frankly, we are a state-owned company. So there is no question of a bailout, whatever funding we would get is an equity into the company.

We are now the largest long-haul carrier operating in the world today. We received the lowest equity injection of any airline, many other airlines have received billions in state aid and subsidies.

Q: Flights are resuming back to Saudi Arabia and to the UAE. What does that mean for Qatar Airways from this point on?

Well, it is a very positive development that has happened. We have persevered during the difficulties and we are now back into the mainstream, our operating costs have started to reduce to what they really should be and we hope that business is good for all of us. At the end, everybody realized it was in their best interests to end the blockade.

Q: What about the future of the Qatar Airways A380s? Are there any plans to have them back flying?

Frankly, we have already taken impairment on five of them; so we are writing off five of the 10 we have. If the pandemic continues to extend over the next 2-3 year period, we will be forced to take impairment on the remaining five.

There is no future for the A380. It was the wrong aeroplane at the wrong time. It is something that

passengers love, many liked to travel on the A380. It's very quite and it's very spacious, but at the end of the day, for the operator, it's really painful to keep them in the skies.

The operating costs are punishing and so are the maintenance costs, an A380 at C check is three times the cost of that of a B777 or an A350-1000.

If you look at the fuel burn per seat mile, It's way above that of any other airplane that is flying today; and you know, it is the aim of Qatar Airways to keep on growing and become carbon neutral with that growth, that airplane just doesn't help us in that respect.

I not only think the A380 is an inefficient aircraft, but some people are still bragging that they're going to start operating it and that it's going to be a very profitable airplane. Let's see how long they will be able to sustain that after the pandemic. When there is a huge movement on the green front, passengers will not want to get into an airplane that has a high pollution rating.

If they produce an aircraft that has more efficient fuel burn, then we would immediately place an order for that airplane; because we want to make sure that we keep on growing and working towards the goal that we have undertaken of carbon neutrality. Do you know that more than 50% of my fleet today is A350 and B787s? and that we still have 23 787-9s to be delivered; we are also still waiting for around 28 A350s to be delivered. So we will continue to keep on investing, while at the same time we are doing everything we can to sustain the environment.

Q: What would Qatar Airways be like without you? Have you ever thought about that?

We have a succession plan, you know, it is something that I built with the full support of my rulers and the goodwill of the Qatari people; it is my duty to have a robust succession plan in place, which is already there. So if I'm there or not Qatar Airways is still a brand of my country and will continue. You know, all heads of the department come and go but the organization still continues; this is what will happen with Qatar Airways.

Till the last day I am on this chair as the group chief executive, I will continue to do my service towards my country and the mandate given to me by His Highness my ruler.

Source https://samchui.com/2021/04/15/exclusive-interview-with-qatar-airways-group-ceo-h-e-akbar-al-baker/#.YIfCkR_ivIV

ENTREPRENEUR OF THE MONTH

Rashmi Chandra

Egyanam Technologies Private Limited



Name : Rashmi Chandra

- Name of the company : Egyanam Technologies Private Limited
- Industry Sector : Cyber Security (Sector Agnostic)
- Products/ Services : SAS based Cyber Security Platforms
- Initial Investment : INR 50 Lacs
- Current Turnover : INR 1.28 Crores

1. Share your individual journey until your dear venture

Fulfilled my dream of doing an MBA from XLRI Jamshedpur in 1994 and joined IFCI in project Finance. Marriage and raising a Family required flexibility in my Workload and Timings. I quit IFCI in 1999 to start my entrepreneurial journey with Stratin InfoServe, a Consulting organisation in the then called Information Security Sector working actively till 2007. I took a break to focus on my Son and work took a Backseat for the next Seven years. Once my Son joined IIT for his B Tech, I again became active focusing on Educational Applications for Kids before Founding eGyanamTech in Feb 2017. We are developing make in India Solutions for Cyber Defence with Advance Technologies like Automation and Artificial Intelligence as part of the Atmanirbhar Bharat initiative of our Prime Minister.

2. What is the vision behind starting your dream company

I realised very early that Cyber security challenges are going to explode and everyone, both on individual and organisation level are going to be a target. So, everyone is going to need protection. I wanted to make Cyber Security Effective, Affordable and Accessible for ALL Organisations and Individuals big or small.

3. What is the strength or USP of your company

Our domain knowledge is very extensive. The founding Team has led Cyber Security Initiatives for the Large Global Organisations with more than 50 years of cumulative experience. We have seen birth of Cyber Security and have traced its growth. This has given us unique insights and expertise to Solve critical Problems using advance Technologies like Automation, Big Data Analytics and Artificial Intelligence.

4. How did you start – initial investment, employees, technology, strategy etc.

The business was started with taking a Bank loan of 40 Lacs and eGyanamTech was formed with THREE Employees who were part of initial IBM Security Team in India. We realised Cyber Security is critical for Business and there are so many challenges, particularly in Area of Smart, Fast and Effective Response to a Cyber Incident. Currently the Action is primarily Manual which is slow and error prone. We added development team to our considerable domain expertise and identified key gaps in the Cyber solution fabric at organisation level. This started our product development journey.

5. What are the main issues that you faced in initial years and How did u manage those challenges?

Main challenges were around managing People and Finances. We invested in resources, both teams and infrastructure but kept other expenses to a minimum. A judicious outlook towards expenses and revenues thru our consulting and professional service projects kept us going.

6. How did you manage the financial challenges?

Own savings and loans from Banks and Family got us started. Then we started doing outsourced projects to generate revenue and meet expenses.

7. How did you manage the technology gaps and acquiring new technologies?

We had significant domain knowledge in our core but technology changes very often in this industry. So it was imperative to keep abreast of the new products and technologies hitting the industry. We formed

partnerships with the leading global organisations in the field like IBM, Splunk, Palo Alto, RSA etc. This gave us access to the technology aspect for our product development and also put us in direct contact with the leading organisations in various industries which helped us in our research and planning of our product roadmaps.

8. How did you manage the human resource, training, staff retention?

Human resources are the most critical component of our industry. We hired resources with good references and constantly upgraded their skills and knowledge with trainings and certifications. Managing the salaries of the senior team members is always a challenge but we managed by our revenues and judicious expense practices.

9. Any other challenge that you faced with the competitor

Our Competitors have poached our Technical resources, being larger Organisations offering 50% jump in Salaries. Working in HiTech industry this is a known risk which we have learned to live with.

10. What the core initiative you taken to stand out from competitor

The Competition is focussed on selling their Solution from Technology perspective only. We believe for the right outcome a Combination of Technology along with end-to-end Delivery Ownership with Customised solutions sold on Annual Service Model is our key differentiator.

So, we are not only bridging the technology gap but also owning the last mile use cases delivery for effective cyber security.

11. Any expansion plan?

We have plans to grow steadily both in terms of solutions and presence geographically. We have incorporated adding different geographies in our projections at the same time launching solutions which address current and future gaps in more domains keeping our core competencies at the centre.

12. What are the achievements? National and international if any

eGyanamTech has received multiple Accolades, Awards, Recognitions and grants at different forums. Our solution was selected amongst top 25 Industrial Innovations by IIGP 2.0 in 2018. We were also the recipient of DST grant of Rs. 5 lacs as winner of ET Power of Ideas competition Organised by CIIE at IIM Ahmedabad. Our solution has received the Award of being "Excellent Cyber Security Automation solution" at the Cyber Security Summit and Awards in 2019 Organised by TEMA.

13. What are your individual achievements national or international if any

I have led eGyanamTech team from its idea stage to a Comprehensive make in India Product in the Advanced Area of Cyber Security Automation which is an import substitute as well. There is going to be saving of considerable foreign exchange also with end customers in India and Abroad. I been conferred the honour of being Nominated the "Technology Woman of the Year" by WASME.

14. What are the core values and principles of your enterprise

At the core is our determination to develop enterprise Cyber Security solutions in the country and take our solutions global. We want to achieve our goals with Equality, Respect for ALL, Fairness and Transparency in business practices.

15. Where do you wish to see your enterprise in next ten year?

We see eGyanamTech as a Global Leader in Cyber Security with Operations in India, Middle East, APAC, Europe and US with turnover of more than 500 Million Dollars in next 10 years

Empowering family businesses to fast-track sustainable development

New initiative harnesses the power of family-owned businesses to be a force for good, investing in and promoting a business model that looks after people and the planet for generations to come.

UNCTAD and the Family Business Network (FBN) have joined forces to mobilize and support family firms to embrace sustainability in their business strategies.

The joint Family Business for Sustainable Development (FBSD) initiative is a first-of-its-kind partnership between the UN and the global family business community.

Two-thirds of businesses worldwide are owned or managed by families, employing 60% of the world's workforce and contributing over 70% of global GDP.

"Family firms can make a huge difference in global efforts towards sustainable development," said James Zhan, UNCTAD's director of investment and enterprise.

He said family businesses need to be empowered to maximize their potential and seize the untapped opportunities associated with embracing the sustainability agenda.

To deliver on the UN Sustainable Development Goals (SDGs) by 2030, an ambitious global effort is required over the next decade to accelerate sustainable solutions to the world's economic, environmental, social and governance challenges.

Family businesses are critical partners

Family businesses are key to building a transformative and sustainable future.

"Collectively, they have immense financial resources to invest in the SDGs and help plug

the trillion-dollar financing gap," Mr. Zhan said.

"Family firms invest their own resources and can take quick action to put their businesses and investments on a sustainable track," he added.

Also, family businesses are locally minded and long-term by nature. They think in generations.

However, many family businesses have traditionally been private and kept a low profile, with limited public disclosure and reporting on sustainability.

How the initiative will benefit family firms
The FBSD initiative gives them the opportunity to transparently report and clearly demonstrate their contribution to improving lives.

It also allows them to better understand why the SDGs matter to their businesses and where they can make an impact, while allowing them to benchmark their sustainability performance against other similar businesses.

The initiative aims to mobilize and support family businesses to commit to concrete and measurable contributions towards the SDGs. It offers them ways and means to integrate sustainability into their conventional business models and to provide evidence of their contributions to the SDGs.

Harnessing global expertise

UNCTAD and FBN will share expertise and best practices derived from their global network of investment and development stakeholders and offer the family business community an international platform to

facilitate their contributions to sustainable development.

FBN is a vibrant community of enterprising business owners that brings together over 4,000 families with 16,000 firms from 65 countries.

"We're excited to partner with UNCTAD in this ground-breaking initiative to create shared prosperity for all, mobilize investment in sustainable development and define success across generations," said Alfonso Libano, co-chair of the FBSD executive board and vice chairman of COBEGA SA, Spain.

"Our current focus is on expanding our capabilities on sustainability reporting and encouraging higher levels of transparency for all family businesses, no matter where they are on their sustainability journey," he added.

Components of the initiative

Key components of the initiative include the family business sustainability pledge, which advocates an environmental, social and governance roadmap that signatories agree to act upon.

FBSD provides family firms with a template, the UNCTAD-FBN sustainability indicators for family business, to guide and assess the implementation of and reporting on actions by individual companies in a measurable, comparable and transparent manner. It seeks to inculcate sustainability considerations among business-owning families and serves as a benchmark for the overall assessment of the results and impact of the global initiative.

The reporting framework builds upon

UNCTAD's guidance on core indicators for entity reporting on contribution towards the implementation of the SDGs.

To complement the framework, the initiative elaborated additional disclosure elements to capture and recognize family businesses' efforts in contributing to sustainable development.

Also, the initiative will include capacity-building activities for family firms, allowing them to participate in global multi-stakeholder discussions on boosting sustainable development efforts, in the context of the World Investment Forum.

The initiative will be guided by an advisory council co-chaired by sustainability luminaries Prof. Jeffrey Sachs, director of the Center for Sustainable Development at Columbia University, and Dame Polly Courtice, founder and director of the Cambridge Institute for Sustainability Leadership.

"I am particularly excited by this initiative because it taps into the inter-generational power of families and family wealth as a means of delivering the SDGs and addressing some of the existential risks that we face," said Dame Courtice at the official launch of the initiative on 25 February.

Doing good while doing well

"The SDG framework challenges us to question whether we are doing enough and focusing on the right themes. Signing the pledge sends out a strong message to our stakeholders: now is the time to act and together we can achieve more," said Marc du Bois, chief executive officer of the Spadel Group, which produces natural mineral water and beverages. "There's no question that sustainability policies are crucial to

Spadel's business success. The purity of our natural mineral water depends on a clean and healthy natural environment," said Mr. du Bois, who is from the third generation of the family running the firm.

He said the SDGs are a fitting blueprint for fostering sustainability among family businesses because they consider not only the current situation, but future generations too.

Source: [Empowering family businesses to fast-track sustainable development | UNCTAD](#)

Japan supports ten UNIDO projects with US\$7.29 million

UNIDO

The United Nations Industrial Development Organization (UNIDO) and the Government of Japan are joining hands to implement ten new UNIDO projects with a total budget of US\$7.29 million. At today's kick-off event, LI Yong, Director General of UNIDO, and Ambassador Takeshi Hikihara, Permanent Representative of Japan to the International Organizations in Vienna, marked the start of projects in Afghanistan, Eritrea, Gabon, Ghana, the Islamic Republic of Iran, Iraq, Madagascar, the State of Palestine, the United Republic of Tanzania, and Yemen. The event was attended by representatives of the beneficiary countries.

In his remarks, UNIDO's Li noted that "a sensible and sustainable recovery has to start now to mitigate the severe and long-lasting effects of the pandemic," adding, "We must apply the lessons learned from last year and tackle the challenges ahead of us. We have to strengthen job creation, build on the benefits of digitalization, advance gender equality, fight against inequalities and the climate crisis."

Li further said, "I am grateful to the Government of Japan for the early response to address the public health challenges and socio-economic consequences of the pandemic."

Ambassador Hikihara stated that "these projects were adopted in the midst of an unprecedented human security crisis caused by the COVID-19 pandemic. Our goal is to provide support to those who are struggling to overcome the crisis, and then to help build back better."

He added, "UNIDO's mandate is more relevant than ever. We expect that UNIDO makes full use of its potential as a platform for partnership bringing together recipients, donors and their private sectors."

By providing a combination of capacity-building programmes in entrepreneurial skills, social cohesion, women's empowerment, and COVID-19 workplace safety, the project in Afghanistan will help beneficiaries to improve their skills and enter the job market or start their own business. The revitalization of the Industrial Support Development Centre in Asmara will be in the focus of the project in Eritrea where an institutional support system for the leather sector, capable of developing industry-relevant human resources, will be established.

Through the project in Iraq, UNIDO will work with host communities and internally displaced people living in displacement camps across the Nineveh Governorate, providing them with sustainable economic and livelihood opportunities. In Yemen, the intervention will also support vulnerable groups of people through a provision of technical and soft skills training to improve

livelihoods, promote resilience and contribute to the stabilization of the country. The project in the Islamic Republic of Iran will support handicraft industries in the country through capacity-building and skills development initiatives. At the same time, the project will improve the resilience of the Sistan and Baluchestan Province against COVID-19, facilitating market access and promoting sustainable employment opportunities. Similarly, in the State of Palestine, the UNIDO project will strengthen the competitiveness of the garment and fashion sector. A new Gaza - Creative Fashion Design Hub will provide a platform for designers and entrepreneurs to develop projects and boost ideas through new fashion formats. Both projects are focusing on an increased participation and employ-ability of women and youth in the identified sectors.

In Gabon and the United Republic of Tanzania, the projects will specifically focus on the countries' personal protective equipment production capacities by upgrading relevant domestic producers, suppliers and public institutions in terms of production, product quality and business resilience. Similarly, the project in Ghana will address the country's need to reinforce, both quantitatively and qualitatively, its capacity to supply critical preventive equipment.

Through the project in Madagascar, UNIDO will address current COVID-19 challenges by supporting the development of an action plan for the introduction of environmentally sound management of healthcare waste. The project will also involve demonstration of Japanese technology for final disposal treatment to help halt the spread of the virus. [Source: Japan supports ten UNIDO projects with US\\$7.29 million | Mirage News](#)

STARTUP NEWS

Five Indian Startups Making Earth Greener

On World Earth Day, we look into five Indian startups working across different sectors with a common goal to make our planet greener

At a time when most of the countries have understood the need to reduce carbon footprint and have expressed their willingness to take necessary steps, it seems few of the countries across the world have been doing their share to tackle the humongous carbon left by humans over the past century.

Increasing temperature, unhygienic water and rising levels of air pollution are just a few of the effects caused by the alarmingly rising carbon footprint that is ravaging our environment. On World Earth Day, we look into five Indian startups working across different sectors with a common aim to make our planet greener.

Ground Waste: Waste Ventures India ADVERTISING

Waste Ventures India is a Telangana-based startup that is providing waste solutions for housing societies and corporate offices by composting organic waste and recycling dry waste. Founded by Roshan Miranda and Rob Whiting in 2012, this for-profit enterprise is changing paradigms in solid waste management by increasing value to stakeholders across the value chain.

The startup boasts that it is able to reduce waste out of the gate (office or society) by up to 90 per cent and leave a green footprint. Its R&D team has developed a scientific, fly-less



Image Credits: Waste Ventures India/ Facebook

and odourless process to manage organic waste, thus producing high quality compost in the process.

The firm also provides a free portion of the compost back to your personal garden use. Waste Venture India team also brings more awareness about waste management among residents and employees and helps them learn about composting, recycling and other green initiatives. The startup was among the first to provide digital doorstep recyclable pickup service in Hyderabad. Since late 2013, the startup has averted over 3,000 tons of waste from Indian dumpsites.

Plastic Free: Beco

Mumbai-based startup Beco is a consumer



Picture credits: Beco

goods company which was founded in 2018. The startup manufactures biodegradable and sustainable alternatives to single use-products such as dinner napkins, toilet roll, facial tissues, tissue roll and more. Founded by Aditya Ruia, Anuj Ruia and Akshay Varma, Beco (Be Eco) offers products for kitchen, home care and personal care.

The startup utilizes biodegradable and compostable raw materials like corn starch and bamboo to prepare various SKUs of tissue, straws, toothpicks, cotton balls, among others. The company also pays much attention towards its packing as it utilizes recycled and craft paper to package, thus eradicating the need of plastics.

Air Pollution: Nexus Power

We all are aware of what stubble burning results in and around the national capital during winters. Air pollution level rockets as the government advises to for elderly and children to stay home.

Nikita and Nishita Baliarsingh, co-founders of Nexus Power have a sustainable way to address the issue, which also might result in an increase in electric vehicles, another green product, on Indian roads.

Nexus power leverages nanotechnology to make biodegradable electric vehicle batteries from crop residue. The company uses unburnt crops-one of the major sources of air pollution-and then by applying a unique extraction and filtration process, manufacture rechargeable energy storing cells. Multiple such cells go into making the Internet-of-Things (IoT) and AI-based sensor enabled battery pack which is later installed in electric vehicles.

Renewable Energy: ZunRoof

ZunRoof is home tech startups and a residential solar rooftop company. Founded in 2016 by Pranesh Chaudhary and Sushant Sachan, the Gurugram-based startup now



boasts of over 10,000 solar rooftop installations and over 30,000 system designs across India. The five-year-old startup is present in over 75 cities across 12 states and claims to have saved electricity bills worth INR 50 crore. The startup is backed by the family office of conglomerate Godrej, Intellicap Investment Network and alumni of IIT Kharagpur.

Waste to Luxury: Phool.co

Founded by engineering graduates, Ankit Agarwal & Prateek Kumar in July 2017, Phool.co converts floral waste into charcoal free luxury incense products.

Relying on deep-tech research, the startup has also developed "Fleather", a viable alternative to animal leather which was recently awarded PETA's best innovation the Vegan World.

At present, Phool.co operates in Tirupati, Andhra Pradesh. During the lockdown, the company ensured its supply chain by sourcing flower waste directly from the distressed horticulture farmers, bringing them critical income in the toughest of times
Source: [Five Indian Startups Making Earth Greener](#) (entrepreneur.com)

This startup reduced time taken to compost food from 2 years to 24 hours

Conventional methods can often take between six and 24 months to produce compost that's ready to grow plants. Landfills create methane, which is a prominent greenhouse gas | Pixabay

When food waste goes to landfill it releases methane, a greenhouse gas more potent than carbon dioxide. One way to make sure your leftovers aren't left to rot like this is to put them to use by turning them into compost. Properly composting food waste can significantly reduce the amount of methane it releases into the atmosphere. But with conventional methods, it can often take between six and 24 months to produce compost that's ready to grow plants.

If that sounds like a long time to wait, how about 24 hours instead? That's what a startup in Malaysia is offering after developing a new composting technique.

Rapid composting

Maeko, based in Kuala Lumpur, has invented a machine that produces compost in an anaerobic environment in which the temperature and airflow are closely controlled. The machine crushes the waste and agitates it to speed up the process - resulting in a bio-

organic compost that's ready to use within a day.

What's more, there are none of the unpleasant smells normally associated with rotting food. The Maeko machine's ventilation system uses bio-enzyme filtration to eliminate odours as it breaks down all types of food waste, including bones and egg and seafood shells.

As well as its range of industrial composters - aimed at shops, restaurants, hotels, schools and more - Maeko is introducing the appropriately named Munchbot, a small-scale portable composter for home use.

Recycling 1 tonne of food waste using its rapid-composting method, rather than sending it to landfill, prevents greenhouse gas emissions that would otherwise take 398 trees a year to absorb, Maeko says.

1 billion tonnes wasted

By providing onsite composting solutions for all kinds of businesses and homes, Maeko says its goal is to help "close the loop" of sustainability, ensuring that waste food goes back into farms and gardens as fertilizer to grow more food. Twenty-six percent of this comes from food service and 13% from retail, but 61% comes from households - with an average of 74 kilogrammes of food being discarded per person each year around the world. The UN says the per-capita food wasted each year is "remarkably similar" from lower-middle-income to high-income countries. At the same time, the UN's Food and Agriculture Organization estimates that 690 million people went hungry in 2019.

A circular future

Using Uplink, the accelerator supports ground-breaking circular economy entre-

preneurs to scale up disruptive innovation across sectors and at an unprecedented pace.

It's part of the "Decade of Action" to deliver the United Nations' 17 Sustainable Development Goals - which include the elimination of hunger - by 2030. To achieve the goals, the UN says individuals as well as governments, civil society and business must step up to the challenge.

Source: [This startup reduced time taken to compost food from 2 years to 24 hours \(theprint.in\)](#)

WOMEN WING NEWS

Funding black female entrepreneurs is crucial to SA's startup growth

Globally, growing attention is rightly being paid to the issue of underfunding of diverse founders in general, and women in particular, in the startup space. According to Quartz, less than five percent of global venture capital went to female-led startups in 2019 (against 10% in Silicon Valley, the global capital of tech startups)

While it's difficult to get an accurate number for South Africa, one estimate suggests that as little as 4.5% of VC funding went to female-founded startups between January 2018 and August 2019. When it comes to black women, meanwhile, the numbers are even more dire. Less than 0.2% of all early-stage venture funding goes to black women.

Those numbers are hardly likely to have improved over the past year either, with research showing that the coronavirus pandemic has hit female-led firms disproportionately when it comes to venture fun-

ding. Some may argue that those figures reflect a shortage of female entrepreneurs. And while it's true that women account for just 19.4% of business owners in South Africa (with even fewer in the high-growth startup space), the numbers receiving funding should still at least be closer to 20% than 4.5%.

The big opportunity

The link between racial and cultural diversity and startup success is similarly well established. A study by the Kauffman Fellows Research Centre found that startups with diverse founders outperform others by 30% when they go public or are acquired, providing improved returns for investors.

One local VC firm that recognises that opportunity is Entrepreneurs for Entrepreneurs (E4E) Africa. While the firm, whose partners all have entrepreneurial experience themselves, does invest in startups with all types of founders, its focus is on "mission-driven founder teams - with special attention on under-represented entrepreneurs (black & female)".

"This has not, however, been - and isn't - the reality in South Africa, and in the world at large," he says. "We, therefore, prioritise investing in under-represented entrepreneurs - black and female founders, and diverse teams."

Having that kind of deliberate focus is important, especially given that as recently as 2017 women held just 10% of all senior positions in private equity and venture capital firms globally "The businesses we invest in are all robust and have the potential to expand across Africa and beyond," he says. "There is massive untapped potential in South Africa, and we want to identify and

support it."

Paying it forward

SweepSouth co-founder and E4E partner Aisha Pandor highlights the importance of support and funding, especially given that she didn't have it in the early stages of her startup career. "In the early days of SweepSouth, we were entirely bootstrapped," she says of the company she co-founded with her husband Alen Ribic. "We ended up having to sell our house and its contents, and move in with my parents. That wouldn't have been a necessity had we been able to access funding."

Today, SweepSouth is one of about 50 black women-led tech startups globally to have raised more than US\$1 million in venture capital funding. That, in part, is what motivated her to join E4E as a partner. "I am constantly approached by early-stage entrepreneurs seeking guidance, advice on funding options, and mentorship. A lot of these entrepreneurs are women, who have a limited number of female role models they can talk to.

Long term rewards

For VCs like E4E that are willing to invest in black and female entrepreneurs, the status quo represents an opportunity, especially as other VCs might pass on startups that don't conform to their idea of a successful enterprise. "Historical funding disparity and an immature eco-system represent an opportunity that we would like to turn into value creation for our entrepreneurs and investors, which will ultimately benefit the entire country into the long term," concludes Sangweni.

Source: [Funding black female entrepreneurs is crucial to SA's startup growth - \(ventureburn.com\)](#)

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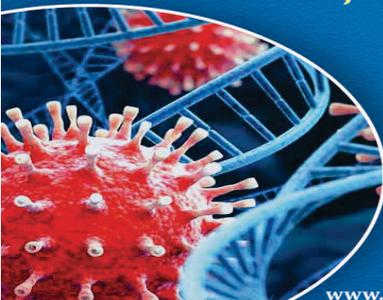
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