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EQUITABLE GROWTH, FINANCE & INSTITUTIONS INSIGHT

Government PensionFund (GPF) Thailand Environmental, Social & Governance (ESG) Weight and Score: Asset Valuation Methodology©

GOVERNMENT PENSION FUND

WORLD BANK GROUP

This report was prepared by Dr. Srikanya Yathip, Secretary General and the investment team of the Government Pension Fund. Input was provided by Dr. Rory Sullivan of Chronos Sustainability, with support from Fiona Stewart and Ratchada Anantavrasilpa of the World Bank

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Cover design and layout: Diego Catto / www.diegocatto.com

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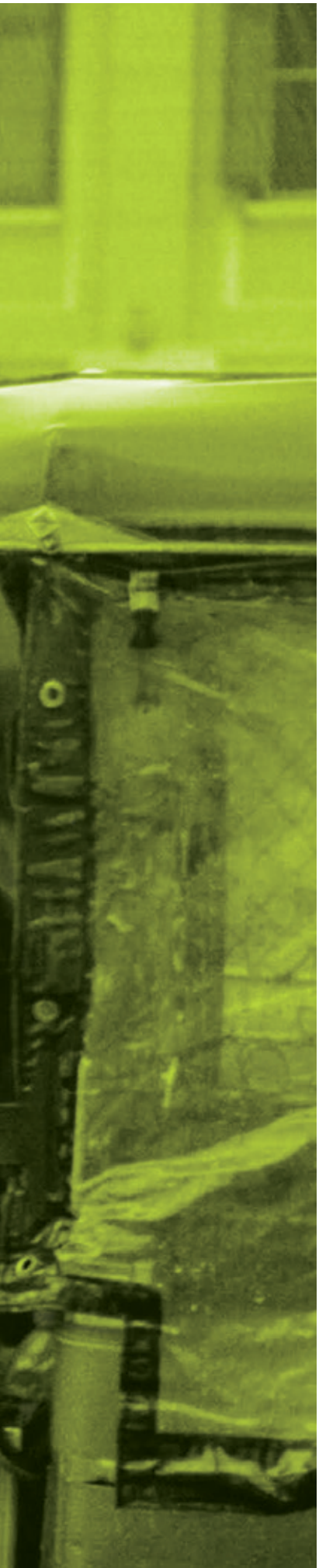

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Introduction

The duty of pension providers is no longer narrowly defined solely in terms of maximizing investment returns and preserving the value of pension assets. Pension providers are increasingly seen as a **universal owners**, having a wider responsibility to support sustainable global values. These values are commonly described as Environmental, Social and Governance (ESG) factors. These ESG factors are important, because of their relevance to global sustainability, and because of their impact on short-term pension financial performance and on the long-term values of the assets held by pension funds.

As one of the largest pension funds in Thailand, Government Pension Fund (GPF) is fully aware of its importance as a universal owner and of its role supporting sustainable global values within the context of ESG. Consequently, in 2018, GPF publicly announced its commitment to ESG investing and its intention to be the leader in ESG investing and initiatives in Thailand. Since then, GPF has pursued its mission through co-operation with the OECD, the World Bank and the PRI and through initiating and leading collaborative engagements with local institutional investors and with GPF's external fund managers, both domestic and international.

One of the central elements of our approach has been to integrate ESG factors into our research and decision-making processes. This is important because it helps us to manage the risks and opportunities associated with ESG issues and because it sends a clear signal to companies about the importance we assign to these issues. This **GPF-ESG Weights and Scores: Asset Valuation Methodology©** document provides a detailed description of our approach, explaining how we analyze and weight ESG factors at the sectoral and at the company or issuer level, and how we incorporate these into asset valuation and pricing.

The GPF-ESG Weights and Scores: Asset Valuation Methodology© comprises three main processes: pre-assessment process, ESG Weight Calculation Process and ESG Score Calculation Processes. The second and the third process use MSCI ESG data as raw data, but these are then adjusted to account for GPF's own ESG beliefs, domestic information and internal analysis thereby customizing MSCI ESG data to be less global and more local. These adjusted GPF-ESG Weights and Scores are then integrated with other data from financial analysis in our asset pricing process.

It is important to note that the methodology has been developed for GPF's own internal purposes and has been designed to reflect GPF's views and priorities. As such, it may or may not be a suitable model for other institutional investors. In publishing this note, our aim is to make the methodology transparent to concerned stakeholders and to share ideas to institutional investor peers. While GPF holds the copyright to the methodology, GPF is happy for other investors to use or apply it at their own discretion. GPF cannot, however, be held accountable for any decisions made directly and/or indirectly as a result of applying the methodology.

This report describing the **GPF-ESG Weights and Scores: Asset Valuation Methodology©** is the result of technical co-operation from The World Bank Group and Dr. Rory Sullivan of Chronos Sustainability and has been informed by technical advice from OECD and from major global pension funds such as PGGM.

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About GPF

A. BACKGROUND

GPF is a mandatory defined-contribution pension fund managing retirement incomes for Thai government officials. As of 2020, GPF has 1.84 million members and approximately US$30 billion in assets under management.

B. FUND OBJECTIVES

GPF's objective is to deliver stable and sufficient retirement incomes for its members.

C. ASSET ALLOCATION FRAMEWORK

GPF's investment strategy is to build a diversified portfolio of assets that aim to balance investment risks and returns via three asset allocation frameworks. Table 1 summarizes the key features of GPF's asset allocation framework.

> > >

TABLE 1 - GPF's Asset Allocation Framework

ASSET ALLOCATION FRAMEWORK	OBJECTIVES	TIME HORIZON	REVISION PERIOD	FACTORS IN FOCUS
LONG-TERM STRATEGIC ASSET ALLOCATION (LT-SAA)	To generate adequate retirement benefits for GPF members, with an expected annual return of CPI plus2.0%.	Long-term (12 years)	Every 4 years	• Member profiles • Long-term inflation • Long-term expected returns and risk appetite
MEDIUM-TERM STRATEGIC ASSET ALLOCATION (M-TAA)	To enhance returns and reduce portfolio risks. To invest consistently with economic regime.	Medium-term (4 years)	Every year	• Economic regimes • Economic and market conditions • Market price levels
TACTICAL ASSET ALLOCATION (TAA)	To tilt the M-TAA to enhance returns and/or reduce portfolio risks	Tactical Asset Allocation (<1 year)	< 1 year	• Market conditions and opportunities • Short-term volatility • Price levels

D. INITIATIVES AND ACHIEVEMENTS RELATED TO THE MISSION TO BECOME THE "LEADER IN ESG INVESTING AND INITIATIVES IN THAILAND"

GPF's approach to integrating ESG issues into its investment research and decision-making – the GPF-ESG Weights and Scores: Asset Valuation Methodology© - is just part of its wider approach to responsible investment. Our ambition is to be recognized as the leading asset owner in Thailand for our approach to ESG investing and to responsible investment more generally. In support of that goal we have:

A. Re-applied to become a PRI Signatory in 2018 after few years of hibernation since the first year of application in 2006.

B. Developed a Negative/Exclusionary Screening policy, which means that we do not invest in businesses that have a direct link to unethical standards such as controversial weapon, gambling, sex and phonography.

C. Executed ESG-Positive/ ESG-Best-in-class Screening for both domestic and global equity and fixed income.

D. Applied OECD due diligence guidelines and integrated ESG factors into our internal investment process

E. Integrated ESG factors into our external fund manager selection criteria.

F. Initiated and led the development of Negative List Guidelines for Thailand. Thirty-two (32) Thai institutional investors now support these Guidelines.

G. Executed active engagement programs through our investment value chains

E. AIM TO BECOME A SUSTAINABLE PENSION AND EMPHASIS ON GOVERNANCE

GPF believes in sustainability and aims to become a sustainable pension fund bringing both '*sustainable yet stable financial returns*' to members and 'social returns' to society and to the global community. As part of this process, GPF has established an investment framework (described in Sections 3 and 4) that enables it, in line with its fiduciary duties and its social responsibilities, to invest within an ESG framework that has a high potential to deliver both social and investment returns, without compromising either of these objectives.

Framing ESG as an investing framework does not mean that GPF assigns an equal weight to each of environmental, social and governance issues. GPF's view, based on its many years of investment experience, is that governance (G-factors) are of far more importance to its investments than environmental (E-factors) or social (S-factors). The reasons is that, unlike E-factors and S-factors, where systems, standards and guidelines can be put in place to manage, control and monitor companies, the G-factors are all about people, specifically those individuals who have powers to manage, control and/or, from a pessimistic view, manipulate companies under their supervision. If people in positions care less about ethical matters or decide not to play by the rules and unethically abuse their powers, any well-established company can collapse rapidly and without warning. Even if these behaviors do not lead to a company collapsing, they can have severe implications for corporate reputations and for share prices.

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GPF-ESG Weight and Score: Asset Valuation Methodology©

A. INTRODUCTION

GPF's **GPF-ESG Weights and Scores: Asset Valuation Methodology**© has been in place since 2018. The methodology is a customized methodology that uses MSCI ESG data as raw data to develop GPF-specific industry ESG weightings and company ESG scores (which we refer to as the GPF-ESG Weight and Score).

B. ESG RAW DATA

As a pension fund not an ESG rating agency, GPF is not in a position to collect its own ESG data for the full universe of companies it invests in. It has therefore decided to use MSCI ESG data – given its global coverage and high reliability - as the raw data for its **GPF-ESG Weights and Scores: Asset Valuation Methodology**©.

When we decided to use MSCI data, we identified two issues. The first was that MSCI's ESG data are calculated on a global basis, leading to the ESG scores of Thai companies being be compared with global companies which certainly had higher ESG standards and practices. If we were to take MSCI's weights and scores, we would find that few Thai companies would have ESG scores comparable to their global peers.

The second was that we saw governance factors as being of higher concern, and we wanted to assign a greater weight to these G-factors in our investment process.

C. PRE-ASSESSMENT PROCESS

Prior to calculating the GPF-ESG Weight and Score for asset valuation, GPF first applies its Pre-assessment Process to screen out companies that fail to meet our screening criteria or the criteria set out in the Negative List Guidelines (the guideline that prohibits GPF from further investing in companies that violate Securities and Exchange Act and/or cause serious negative ESG impact). Our process does allow us to include companies who manage to activate their ESG's responsibilities and clear any ESG charges against them.

D. ESG WEIGHT CALCULATION PROCESS (FOR ALL SECTORS)

Table 2 summarizes the key issues MSCI considers in each of the environmental, the social pillar and the governance pillar. On a sector-by-sector basis, MSCI defines the weight that it considers should be assigned to each of these pillars, based on its assessment of the key ESG issues for that sector, it assessment of the relative importance of environmental, social and governance issues to that sector and its assessment of how well the sector is managing these risks.

> > >

TABLE 2 - MSCI's Key Issues by ESG Pillar

ENVIRONMENTAL PILLAR			
CLIMATE CHANGE	**NATURAL CAPITAL**	**POLLUTION & WASTE**	**ENVIRONMENTAL OPPORTUNITIES**
CARBON EMISSION	Water Stress	Toxic Emission & Waste	Clean Tech
PRODUCT CARBON FOOTPRINT	Biodiversity & Land Use	Packaging Material & Waste	Green Building
FINANCING ENVIRONMENTAL IMPACT	Raw Material Sourcing	Electronic Waste	Renewable Energy
CLIMATE CHANGE VULNERABILITY			

SOCIAL PILLAR			
HUMAN CAPITAL	**PRODUCT LIABILITY**	**STAKEHOLDER OPPOSITION**	**SOCIAL OPPORTUNITIES**
LABOR MANAGEMENT	Product Safety & Quality	Controversial Sourcing	Access to Communication
HEALTH & SAFETY	Chemical Safety		Access to Finance
HUMAN CAPITAL DEVELOPMENT	Financial Product Safety		Access to Health Care
SUPPLY CHAIN LABOR STANDARD	Privacy & Data Security		Opportunities in Nutrition & Health
	Responsible Investment		
	Insuring Health & Demographic Risk		

GOVERNANCE PILLAR	
CORPORATE GOVERNANCE	**CORPORATE BEHAVIOR**
BOARD	Business Ethics
Pay	Anti-Competition Practices
Ownership	Corruption & Instability
Accounting	Financial System Instability
	Tax Transparency

Source: MSCI

In calculating GPF's ESG Weight, GPF conducts the following steps:

STEP 1: MULTIPLY MSCI'S G-WEIGHT BY 1.3.

The conversion factor is applied for G Factor so that the G-Weight will not be less than 35% (around 1/3 of the total ESG-Weight). 65% Cap is also applied so that the G-Weight will not overshadow the E & S (G-Weight will not be higher than 2/3 of the total ESG-Weight). The final G-Weight will be in the range of 35% - 65% to reflect the significance of governance in Thai market, yet leaving enough room for E & S.

STEP 2: ADJUST THE E-WEIGHT AND S-WEIGHT

The E-Weight and S-Weight take account of: (a) the total remaining weight after deducting the newly calculated G-Weight, and (b) the original MSCI's E-Weight and S-Weight. The final decision on the E- and S-Weights is made by GPF's Investment team and Sustainable Investment team, taking account of (a) and (b), and their own views of and experience with the sector in question.

EXAMPLE ***FINANCE AND SECURITIES SECTOR***

MSCI's G-Weight for this sector is 21%. Multiplying it by 1.3, changes the weight to 27%. As this is less than 35%, GPF set the G-Weight to 35% (to comply with GPF's condition that G-WEIGHT of any business must be between 35% and 65%).

When discussing the E- and S-Weights, GPF's investment teams unanimously agreed that the 5% assigned by MSCI to the E-Weight was the appropriate weight and that the remaining weight (60%) should be assigned to the S-Weight. That is, the S-Weight was reduced from 74% (in MSCI's model) to 60% (in GPF's). Table 3 summarizes these calculations and presents the differences between MSCI and GPF's calculations.

> > >

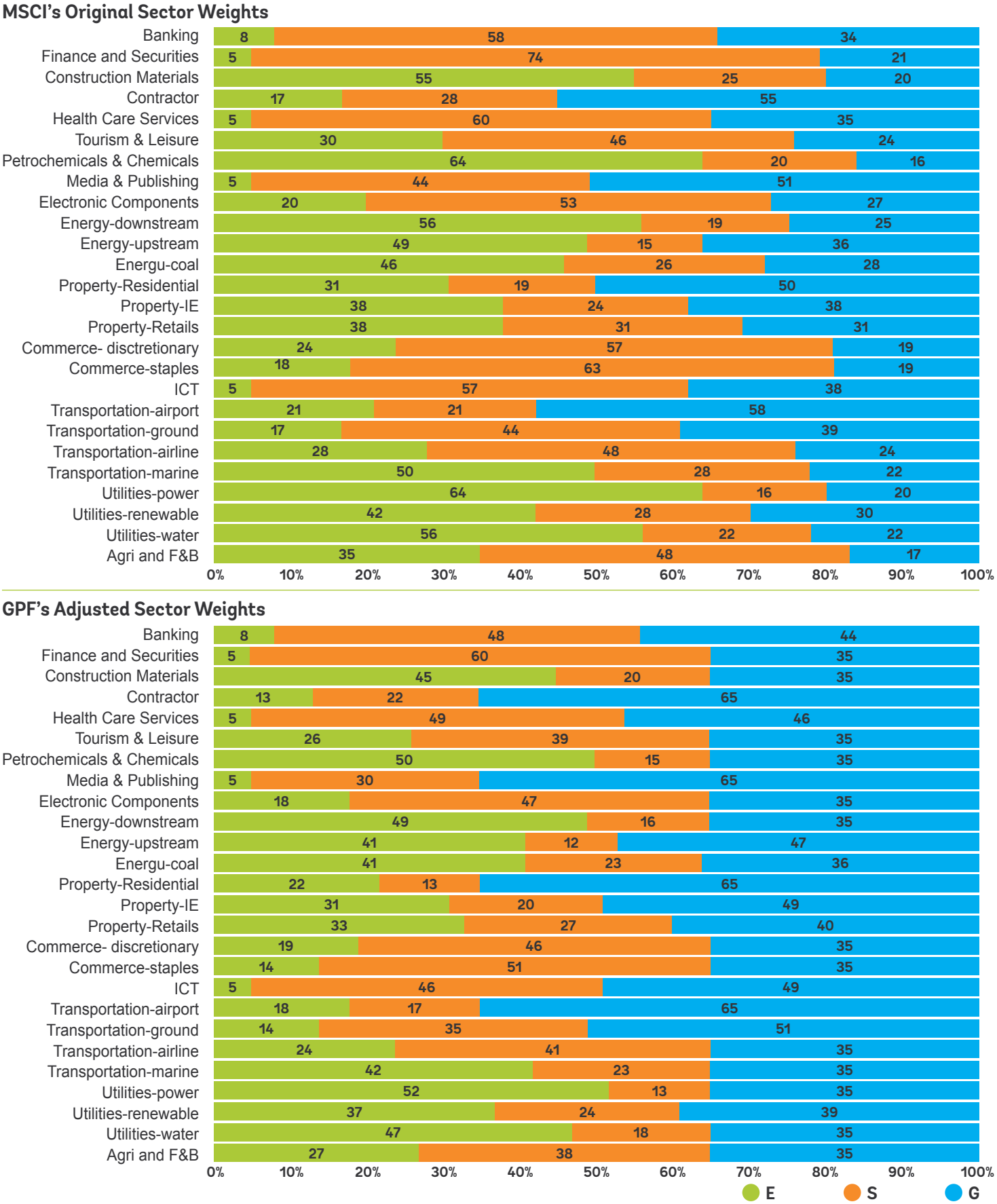
TABLE 3 - Sample of ESG WEIGHT of Finance and Securities sector

Business sector	MSCI original Sector weights			GPF adjusted Sector weights		
	E WEIGHT	S WEIGHT	G WEIGHT	E WEIGHT	S WEIGHT	G WEIGHT
Finance and Securities	5%	74%	21%	5%	60%	35%

Figure 1 presents the full comparison – on a sector-by-sector basis - between MSCI's original industry weights and GPF's adjusted industry weights.

> > >

FIGURE 1 - Graphs comparing MSCI's original ESG WEIGHTS and GPF adjusted ESG WEIGHTS



E. ESG SCORE CALCULATION PROCESS (FOR THAI COMPANIES)

Similar to the GPF ESG Industry Weights, GPF uses MSCI data as raw data to develop ESG scores for Thai companies. The scores are, however, adjusted in more details with the intentions to:

1. Limit the comparing universe to within Thailand not global
2. Comply with any available, standardized Thai local rating data and
3. Reflect GPF's expert views on the ESG performance of Thai companies.

In accordance with the above-mentioned intentions, GPF develops the following 2 steps:

STEP 1: E-SCORE AND S-SCORE CALCULATION

In calculating E-Score and S-Score for Thai companies, GPF view is that the raw MSCI's E- and S-Scores cannot be used directly as they were calculated so that companies could be compared with a global universe. To adjust these scores for the Thai universe, GPF first re-frames the MSCI's 0.0-10.0 scale to 4.0-10.0. That means that no Thai company would have an E- or an S-Scores of less than 4 since the new minimum score starts from 4.0.

To assign the E- and S- scores for all Thai companies, GPF then searches for the Thai company that achieves the lowest E-Score and the Thai company that achieves the lowest S-Score. These two companies are respectively assigned an E-Score and an S-Score of 4.0. The remaining companies then receive updated E- and S-Scores, using the MSCI E- and S-Scores and the formula below. We present an example to show how these calculations work in practice.

GPF'S E-SCORE AND S-SCORE CALCULATING FORMULA:

$$[(MSCI_{E\text{-score}} - MSCI_{old\ minimum}) \div \text{Old Range} \div \text{New Range}] + \text{New Minimum}$$

Example: S-Scores and E-Scores calculation for company GG, SS and BB (Table 4)

- Company GG, SS and BB are all in the same industry sector (Finance and Securities Business).
- Company BB has the lowest E-Score (of 1.4). GPF adjusts the score to 4.0 according to GPF's framework to reframe MSCI's E-score to within Thai universe.
- Company SS has the lowest S-Score (of 3.1). GPF adjusts the score to 4.0 according to GPF's framework to reframe MSCI's S-score to within Thai universe.
- The remaining E-scores and S-scores for all three companies are calculated using the above-mentioned formula.

EXAMPLE: E-score calculation for company GG
[(7.8 – 1.4) ÷ (10.0-1.4) ÷ (10.0-4.0)] + 4.0 = 8.5

EXAMPLE 2: S-score calculation for company BB
[(3.7 – 3.1) ÷ (10.0-3.1) ÷ (10.0-4.0)] + 4.0 = 4.5

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TABLE 4 - MSCI's E-Scores and S-Scores compared GPF's E-Scores and S-Scores

	MSCI		GPF	
	E-Score	S-Score	E-Score	S-Score
Company 'GG'	7.8	3.8	8.5	4.6
Company 'SS'	5.5	3.1	6.9	4.0
Company 'BB'	1.4	3.7	4.0	4.5

In Figure 2, we present a full comparison between MSCI and GPF's E and S-Scores. As would be expected the effect, in both cases is to move the scores up and to the right. While the effect is to compress (or reduce) the difference in scores between different companies, the relative performance of individual companies is unchanged (i.e. the Thai leaders remain leaders and poorer performers remain poorer performers).

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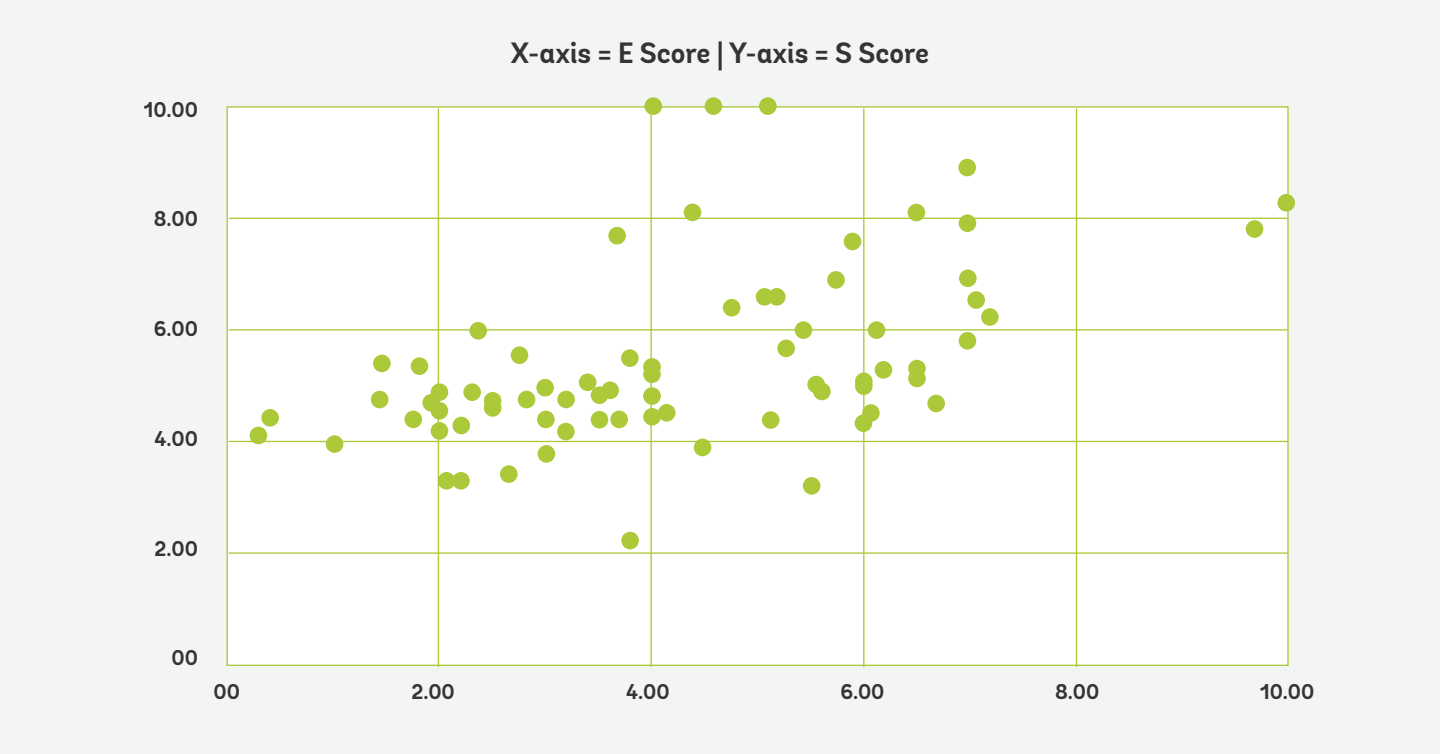
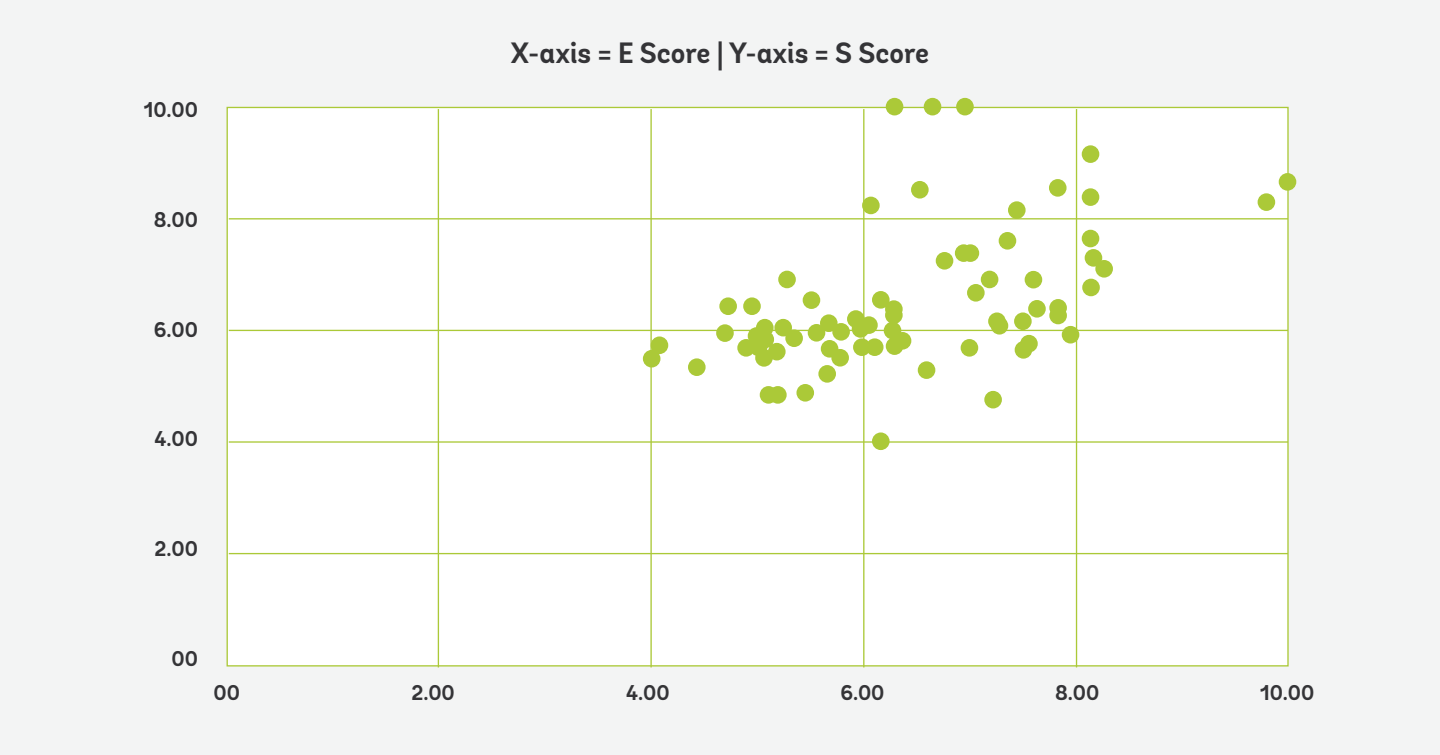
FIGURE 2 - MSCI's E-scores and S-scores VS GPF's E-scores and S-scores

MSCI's E-scores and S-scores



GPF's E-scores and S-scores



STEP 2: G-SCORE CALCULATION

In calculating G-Score for Thai companies, GPF incorporates:

A. The Star Rating from Thai IOD's Corporate Governance Rating (CG Rating) where the maximum 5 stars in this rating system is assigned a maximum score of 10 and 1-4 stars are calculated respectively and

B. GPF's own internal analysis on governance-related issues such as ESG information disclosure, qualitative responses to GPF's engagement, board structure, independency of external board etc.

The weight proportion of the additional two factors are 10% and 30% respectively, leaving 60% for the original MSCI's G-scores. Table 5 illustrates how GPF's G-scores are calculated.

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TABLE 5 - G-Scores Calculation for Company GG, SS and BB

Company	MSCI G-Score	GPF's G-sub factors scores and G-weights			GPF G-score
		1) CG Rating (weight 10%)	2) GPF's G-analysis (weight 30%)	3) MSCI G-Score (weight 60%)	
Company 'GG'	7.6	10	8	7.6	8.0
Company 'SS'	5.4	6.5	7	5.4	6.0
Company 'BB'	3.2	4	4	3.2	3.5

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Implications and Application to Decision Making

In applying **GPF-ESG Weights and Scores** into asset pricing and valuation in addition to financial analysis, GPF uses both the GPF Industry weight and GPF company scores. Table 6 shows details of **GPF-ESG Weights and Scores.**

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TABLE 6 - GPF ESG Weights and Scores of Company GG, SS and BB (Finance and Securities industry)

-GPF ESG WEIGHTS AND SCORES			
INDUSTRY: Finance & Securities Industry			
ESG Weights	E-factors	S-Factors	G-Factors
	5%	60%	35%

Company Names	E-Scores (Min 4-Max 10)	S-Scores (Min 4-Max 10)	G-Score (Min 0-Max 10)	GPF ESG Scores
Company "GG"	8.5	4.6	8.0	6.0
Company "SS"	6.9	4.0	6.0	4.8
Company "BB"	4.0	4.5	3.5	4.1

A. EQUITY INVESTMENT

To apply ESG scores in asset valuations for equity investment, GPF assigns meanings and rules as set out in Table 7. Essentially, the rule is that the ESG Score is to alter the discount rate; companies with lower ESG risks (i.e. their ESG Score is higher) have a lower discount rate applied, and companies with a higher ESG risk have a higher discount rate applied.

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TABLE 7 - Rules for ESGs Scores Definitions and Executions

	GPF ESG Scores	Definitions	Executions
Rule #1	>8	Low ESG Risks	Apply a LOWER discount rate of 25 bps LESS.
Rule #2	<6	Moderate-High ESG Risks	Apply a HIGHER discount rate of 25 bps MORE
Rule #3	≥ 6 but ≤ 8 ESG	Acceptable ESG Risks	-none-

EXAMPLE: COMPANY SS:

SS company gets '4.8' GPF ESG score which is less than 6. In this case GPF will apply Rule #2, which is to apply a **higher** discount rate of 25 bps to company valuation. The application of the rule reduces the company's target price from THB46 to THB 42.60. Table 8 provides details.

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TABLE 8 - ESG Impact to Equity Valuation of Company SS

ESG IMPACT TO EQUITY VALUATION OF COMPANY SS		
Company 'SS	WACC	Target Price (THB)
Original Valuation	7.66%	46.00
ESG risk adjustment	+0.25%	3.40
ESG-adjusted valuation	7.91%	42.60

It is important to note that these adjustments to the WACC are just one element of the valuation price. The valuation of a company also, to the extent that is relevant, takes account of the business risks and opportunities presented by sustainability issues (e.g. if certain product lines or activities are threatened by new legislation, if the company is developing new products or services to respond to consumer demand, if the company has a strong sustainability brand).

B. FIXED INCOME INVESTMENT

In fixed income investment, GPF uses the GPF ESG Company Score as an additional material input to calculate the GPF Credit Score for each issuer or company.

The calculated Credit Score is used to evaluate a company's creditworthiness and the probability that a company will repay its debts. As illustrated in Figure 3 below, the GPF Credit Score is a combination of:

A. **65% CORE CREDIT SCORE** (Anchor): This is the analysis of a company's creditworthiness which directly affects the probability that a company will repay its debts. Within this score, business profiles and financial profiles are considered equally important; 50% weight is assigned for each.

B. **35% MODIFIERS: THESE ARE** additional factors – management quality, financial policy, etc. - which can materially increase or reduce the probability that a company will repay its debts. A company's GPF ESG Score, as described above, is included in the 35% Modifier and is assigned a 25% weight in this category.

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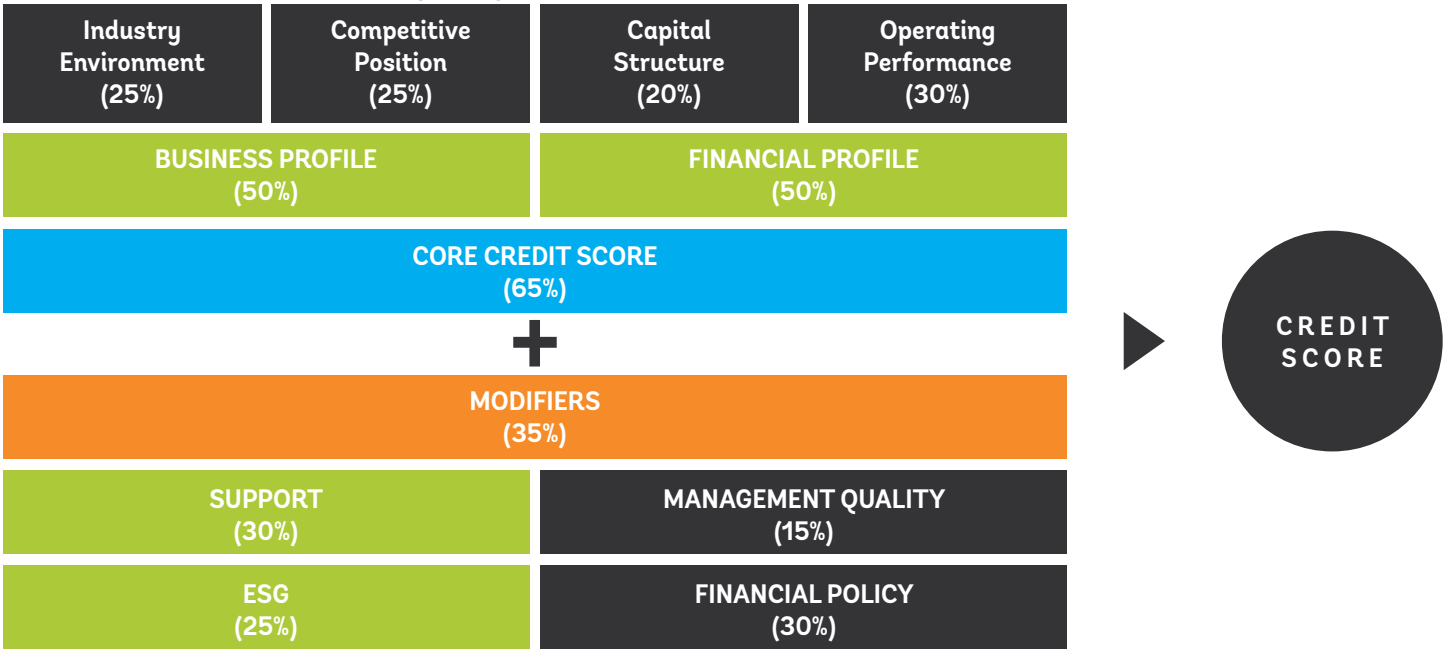
FIGURE 3 - GPF Model of Integrating ESG factors in Fixed Income Credit Score



We apply this Credit Scoring Methodology to corporate bonds and to state-owned enterprise bonds, but not to government bonds. At present, across our fixed income portfolios, approximately 37% of our holdings are in corporate bonds, 18% in state-owned enterprise bonds and 45% in government bonds.

EXAMPLE:

Table 9 illustrates how GPF calculates credit scores for companies. The letters on the left explain how to calculate the Core Credit, Modifier, and GPF Credit Scores while the numbers on the right show the decision-making flows.

For each of the categories, companies are graded out of ten (10) by GPF's team of credit research analysts, and then assigned a weighing in line with the rules governing the calculation of the Core Credit Score and the Modifiers.

In this model, ESG Scores effectively account for 8.75% of the overall GPF Credit Score, as ESG Scores account for a quarter of the total Modifier Score, which in tun accounts for 35% of the total GPF Credit Score.

Table 9 also illustrates how these data are used to select companies for our fixed income investment portfolios, using the assumption that the credit ratings, time to maturity and the spread are the same for Companies J, K and L.

If we were comparing Company J with Company K, we would choose Company J as it has a higher GPF Credit Score than Company K. However, if we were comparing Company J with Company L, we would choose Company L because its ESG Score is higher than Company J. That is, in this situation, the company ESG Score is effectively the tiebreaker.

> > >

TABLE 9 - Application of GPF ESG Score

Score out of 10

		Effective Weight	Company J	Company K	Company L	
A	Business Pofile	32.50%	7.5	8.0	7.0	
B	Financial Profile	32.50%	8.5	7.0	9.0	
C = weighted of A & B	**CORE CREDIT**	**65.00%**	**8.0**	**7.5**	**8.0**	
D	Support	10.50%	9.0	7.0	8.5	
E	Management Quality	5.25%	8.6	8.0	8.0	
F	Financial Policy	10.50%	7.5	9.0	7.5	
G	ESG	8.75%	7.0	6.0	8.0	**(3)**
H = weighted of D, E, F & G	**MODIFIER**	**35.00%**	**8.0**	**7.5**	**8.0**	
I = weighted of C & H	**GPF CREDIT SCORE**	**100.00%**	**8.0**	**7.5**	**8.0**	**(1)**
	Other Considerations		**Company J**	**Company K**	**Company L**	
	Credit Rating		**AA-**	**AA-**	**AA-**	**(2)**
	Time to Maturity (Years)		**3.0**	**3.0**	**3.0**	
	Spread (Basis points)		**80.0**	**80.0**	**80.0**	

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