Charting the way forward for sustainable finance talent development

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June 2023

Abstract

This paper explores how the integration of climate change and sustainability into global financial markets is shaping the need for sustainable finance skills and talent management. It employs Elinor Ostrom's Institutional Analysis and Development (IAD) framework methodologically, and uses qualitative methods to examine the talent-related dynamics experienced across financial market stakeholders. Desktop research, a survey and interviews with expert stakeholders in Hong Kong's financial market are used to conceptualize the talent required to integrate sustainability into the financial system. In doing so this paper seeks to help governments create the enabling environment to allow International Financial Centers (IFCs) to support global climate and sustainability objectives. We investigate the regulatory developments that are driving the market for sustainable finance professionals and use case studies to describe how different markets are building talent-development strategies in response to these needs.

1 Introduction

The increasing importance of sustainability as a priority for International Financial Centers (IFCs) has led to a growing need for individuals who can combine the fields of climate and sustainability with the functioning of financial markets. However, due to the recent emergence of climate change and sustainability as key aspects in IFCs, a fully developed skilled workforce is yet to be realized.

As demand for such talent grows, how it develops and how to avoid "competence greenwashing" in the talent market remain unclear.[1]

The various stakeholders, such as asset owners, managers and investee organizations, within these IFCs will all have unique roles to play. Financial market participants (FMPs), financial service providers (FSPs), and financial market authorities (FMAs), such as central banks and financial regulators, but also

[1] Schumacher, K. (2022). Environmental, Social, and Governance (ESG) Factors and Green Productivity: The Impacts of Greenwashing and Competence Greenwashing on Sustainable Finance and ESG Investing. APO Productivity Insights Vol. 2-11 (2022), Retrieved from: https://ssrn.com/abstract=4303609

academics, scientists and civil society, and the need to understand their respective roles and challenges which will determine the types of skills and talent they require in the future. Formalizing this landscape can help to create structured approaches to training and capacity building efforts.

This paper uses a public policy lens to study the market for knowledge and skills needed to integrate sustainability into our planet's financial centers.[2] By viewing the stakeholders as actors guided by rules and norms, we unpack the types of talent, i.e. the abilities and aptitudes, required to support the functioning of sustainable IFCs.

The following literature review situates the current debate on climate finance talent between the academic discourse on talent management and strategic human resource management, and that pertaining to the role of public policy and macro-level approaches to financial market development. This is followed by an overview of the results taken from a survey conducted of sustainable finance market professionals in Hong Kong. The results of this survey help to motivate the methodological choice to apply Elinor Ostrom's Institutional Analysis and Development (IAD) Framework as an organizational tool for studying the actors and actions involved in the greening of finance. The paper then hones in on the discussion of a) the institutions that are shaping demand for sustainable finance talent, b) the stakeholders (actors) within the financial market who will seek new talent and skills, and c) the experiences of four countries as they seek to boost sustainable finance talent supply.

This paper aims to contribute to the emerging interdisciplinary field intersecting human resources and organizational management, climate change, sustainability, public policy, and financial regulation. It is intended to contribute to thinking about the strategies for increasing the capacity of IFCs to become sustainable by focusing on the types of job functions that will need to be conducted. In doing so, this research aims to provide practical support for IFCs in constructing talent pools capable of bolstering global climate change mitigation and sustainable development initiatives.

2 Literature Review

Mainstream media in Hong Kong has reported that a war for ESG talent has erupted in Asia, which may suggest that organizations are experiencing a shortage of professionals who can support their sustainability goals.[3]

The percentage of institutional investors in Asia who felt "held back from

[2]green, climate, and sustainable finance are often used interchangabley within this field, for the purposes of this paper sustainable finance is used as a catch-all phrase and to imply that the lessons taken from the climate and green finance developments may have broader implications for the integration of the UN Sustainable Development Goals into financial activity.

[3]South China Morning Post (2023). 'Bidding war' for ESG talent breaks out among Hong Kong companies needing help on sustainability goals, head hunters say. Retrieved from: https://www.scmp.com/business/banking-finance/article/3218987/bidding-war-esg-talent-breaks-out-among-hong-kong-companies-needing-help-sustainability-goals. Accessed June 01, 2023.

more ESG-based investing due to a shortage of expertise or qualified staff," rose from 26 percent in 2020 to 40 percent in 2021 according to a survey by HSBC (2021).[4]

So-called wars for talent have persisted since as early as 1997.[5] and as a social construction with no standardized, clear or consistent definition, the concept of "talent management" can be elusive and should be approached cautiously.[6]

Nonetheless, as McDonnell (2011) emphasizes, talent management is becoming an increasingly decisive feature in the success of financial institutions and corporates, and there is a unique opportunity, but also urgent need to study this field through the lens of sustainable finance.[7]

Businesses, multinational corporates and financial institutions are perpetually on the hunt for talented people and have refined their strategies for retaining and reskilling them.[8]

This challenge of finding the right people is argued to have become more prominent in recent decades due to the series of globally disruptive black-swan events such as the financial crisis [9] and most recently the COVID-19 pandemic – which has given global citizens an opportunity to rethink their perceptions of work-life balance and challenged conventional thinking about the need to work in megacities.[10] [11]

Typical studies in talent management and organizational behavior focus on the development of strategies for firms to attract, manage, upskill and retain

[4] HSBC (2021). ESG Talent Shortage Holding Back Sustainable Investing in Asia. Hongkong and Shanghai Banking Corporation. Retrieved from: https://www.about.hsbc.com.sg/news-and-media/esg-talent-shortage-holding-back-sustainable-investing-in-asia

[5] Michaels, E., Handfield-Jones, H., Axelrod, B. (2001). The War for Talent. Brighton, MA: Harvard Business Press

[6] Wiblen, S., McDonnell, A. (2020). Connecting 'talent' meanings and multi-level context: A discursive approach. The International Journal of Human Resource Management, 31(4): 474-510. Retrieved from: https://ro.uow.edu.au/cgi/viewcontent.cgi?article=1606context=gsbpapers

[7] McDonnell, A. (2011). Still fighting the "War for Talent"? Bridging the science versus practice gap. Journal of Business and Psychology, 26(2), 169–173. Retrieved from: https://link.springer.com/article/10.1007/s10869-011-9220-y

[8] Tung, R.L., Lazarova, M.B. (2006). Brain drain versus brain gain: an exploratory study of ex-host country nationals in Central and East Europe. International Journal of Human Resource Management, 17(11), 1853–1872. Retrieved from: https://doi.org/10.1080/09585190600999992

[9] McDonnell, A., Burgess, J. (2013). The impact of the global financial crisis on managing employees. International Journal of Manpower, 34(3), 184–197 Retrieved from: https://dx.doi.org/10.1108/IJM-04-2013-0076

[10] Rose, P. A., Brown, S. (2021). Reconstructing Attitudes towards Work from Home during COVID-19: A Survey of South Korean Managers. Behavioral Sciences, 11(12), 163. MDPI AG. Retrieved from: http://dx.doi.org/10.3390/bs11120163

[11] Forbes, S., Birkett, H., Evans, L., Chung, H., Whiteman, J. (2020). Managing employees during the COVID-19 pandemic: Flexible working and the future of work. Behavioral Sciences. Retrieved from: https://www.birmingham.ac.uk/schools/business/research/research-projects/equal-parenting/research.aspx

talented employees.[12] [13] [14] Gallardo-Gallardo & Thunnissen (2016) suggest that such studies are predominantly centered around theoretical approaches to studying talent management, often within Anglo-Saxon and western country contexts.[15] Quite similarly, Collings & Mellahi (2009), find that much of this research is based on multinational, private and US-based organizations – which may not always be appropriate in emerging market contexts.[16] This is not exclusively the case, as Ambrosius (2018) for example, shows the relationship between differing talent management strategies and employees' intention to leave their jobs at multinational corporations in Brazil.[17]

Gallardo-Gallardo (2016) also points out, that much academic interest in the area of talent management practices takes a microeconomic, or firm level approach, and is focused on the impact of strategies that may influence the identification, recruitment, selection, training and development, retention of individuals by firms. While firms (both financial and non-financial) play an indisputable role in the transitioning of economies and are undoubtedly worthy of such attention, we begin to identify a noticeable gap in this field, namely surrounding the need for macro-level approaches to talent management.

It is only in recent years that interest in research about the macro factors that shape talent markets has emerged. It was not until Khilji et al. (2015) pointed out that while the global talent management is a relatively nascent field, there is an increasing interest among governments to attract talent, grow local talent and reverse their diasporas.[18] The paper reflects on the complex socio-economic and political structures that firms operate in, and argues that firms compete amongst themselves, but are also part of a wider competition occurring between markets. Thus, talent management needs to be contextualized into a macro and geopolitical context.

Similarly, Vaiman, et al. (2019) have described how different countries seek

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[12] Becker, B. E., Huselid, M. A. (2006). Strategic human resources management: Where do we go from here? Journal of Management, 32(6): 898-925. Retrieved from: https://www.markhuselid.com/pdfs/articles/2006$_{Becker}$$_H$$uselid_S HRM_J OM.pdf$

[13] Boudreau, J. W., Ramstad, P. M. (2007). Beyond HR: The New Science of Human Capital. Brighton, MA: Harvard Business School Press Books

[14] Meyers, M. C., van Woerkom, M. (2014). The influence of underlying philosophies on talent management: Theory, implications for practice, and research agenda. Journal of World Business, 49(2): 192-203. Retrieved from: https://linkinghub.elsevier.com/retrieve/pii/S1090951613000795

[15] Gallardo-Gallardo, E., Thunnissen, M. (2016). Standing on the shoulders of giants? A critical review of empirical talent management research. Employee Relations, 38(1), 31–56. Retrieved from: https://doi.org/10.1108/ER-10-2015-0194

[16] Collings, D. G., Mellahi, K. (2009). Strategic talent management: A review and research agenda. Human Resource Management Review, 19(4): 304-313. Retrieved from: https://doi.org/10.1016/j.hrmr.2009.04.001

[17] Ambrosius, J. 2018. Strategic talent management in emerging markets and its impact on employee retention: Evidence from Brazilian MNCs. Thunderbird International Business Review, 60(1): 53-68. Retrieved from: https://onlinelibrary.wiley.com/doi/epdf/10.1002/tie.21799

[18] Khilji, S. E., Tarique, I., Schuler, R. S. (2015). Incorporating the macro view in global talent management. Human Resource Management Review, 25(3), 236–248. Retrieved from: https://doi.org/10.1016/j.hrmr.2015.04.001

to increase their global competitiveness, attractiveness and economic development by strengthening their talent management strategies – but are also constrained by national and geopolitical factors. The study emphasizes the importance of an interdisciplinary approach to cross-border flows of talent, knowledge flows, global labour markets, politics and national policies. Moreover, it advocates for an interdisciplinary approach to talent management that draws on other fields including human resource management, international business, economic geography, comparative international development, and political economy.[19]

Beyond these studies, the field of macro-level talent management research remains nascent. Equally limited, is the body of research connecting the themes of climate and sustainable finance with talent management – at either the firm or the macro level. Although studies by Cen et al. (2022) and Salha (2022) both find a positive effect of firms' corporate social responsibility (CSR) policies on employee retention, such studies are not commonplace, nor do they touch on the broader policy picture that governments must consider when building their sustainable finance marketplaces.[20] [21]

However, the tide may be turning on the field of talent management in climate and sustainable finance, most notably, thanks to Schumacher (2022) who has sounded the alarm about the risk of competence greenwashing and argues that competence greenwashing can occur when firms (and presumably by extension individuals) overstate their environmental credentials, create a false sense of trust in their environmental statements, offerings, claims and qualifications.[22] Such greenwashing could potentially impede trust in the sustainable finance market and divert capital away from the types of investments needed to fight climate change. Certainly, we must question whether the market for sustainable finance talent is at risk of becoming a market of lemons.

Contributing to the need for more thinking around the field of sustainable finance talent would undoubtedly be a direct response to the problems raised by Webb (2022), Naumann (2020) and HSBC (2021), who argue that FMPs are finding talent shortages to be a major bulwark to further progress on sustain-

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[19] Vaiman, V., Sparrow, P. R., Schuler, R. S., Collings, D. G. (Eds.). (2019). Macro Talent Management in Emerging and Emergent Markets: A Global Perspective. Abingdon, UK: Routledge.

[20] Cen, X., Qiu, Y., Wang, T. Y. (2022). Corporate Social Responsibility and Employee Retention. Retrieved from: https://ssrn.com/abstract=4144689

[21] Salha, R. (2022) The Influence of a Company's Sustainability Initiatives on Its Employee Retention. Diss. American University of Beirut. Retrieved from: https://laur.lau.edu.lb:8443/xmlui/handle/10725/14138

[22] Schumacher, K. (2022). Environmental, Social, and Governance (ESG) Factors and Green Productivity: The Impacts of Greenwashing and Competence Greenwashing on Sustainable Finance and ESG Investing. APO Productivity Insights Vol. 2-11 (2022), Retrieved from: https://ssrn.com/abstract=4303609

ability.[23] [24] [25]

An annual ranking of the global green finance market, the Global Green Finance Index (GGFI) identifies human capital as one of four main areas of competitiveness, alongside sustainability, infrastructure and business, to construct its algorithm consisting of over 100 instrumental factors and responses from industry surveys, to score countries under its global index of green finance centers. Notably, based on its industry surveys, it also finds that policy and regulatory frameworks are considered to be the most important drivers of the green finance market, followed by academic research.[26]

As this field continues to expand there will be increasingly more novel and interesting ways to approach it. Tripathy (2022), for example, adopts an anthropological approach to unpacking the drivers behind individuals' decisions to enter this budding job market and establish themselves as climate finance professionals.[27] Such unique perspectives can be helpful in understanding how firms can strengthen their practices, branding or cultures to stay attractive, but also open the discussion to the humanistic elements of career trajectories and the interaction between labor markets and social and economic change.

3 Observations from Hong Kong

A survey (n=56) was conducted in 2022 among FMPs in Hong Kong to characterize their perceptions of the talent market for sustainable finance. It was distributed to professionals from different FMPs in Hong Kong, including asset managers, family offices, auditing and consultancy firms, service providers, and banks who were recognized as having experience within the sustainble finance field.

As the findings showed sustainability, climate change, talent management and financial regulation have become more important themes in Hong Kong. As Figure 2, below shows, respondents indicated that they were doing a wide range of sustainable finance activities including investing in sustainable finance products; structuring, arranging or underwriting of such products.

[23] Webb, D. (2022). Consultants overestimate quality of own advice on climate, report suggests. Responsible Investor. Retrieved from: https://www.responsibleinvestor.com/consultants-overestimate-quality-of-own-advice-onclimate-report-suggests/

[24] Nauman, B. (2020). Fund managers struggle to compare ESG apples with oranges. Financial Times. Retrieved from: https://www.ft.com/content/6ff72af4-5d76-11ea-ac5e-df00963c20e6

[25] HSBC (2021). ESG Talent Shortage Holding Back Sustainable Investing in Asia. Hongkong and Shanghai Banking Corporation. Retrieved from: https://www.about.hsbc.com.sg/news-and-media/esg-talent-shortage-holding-back-sustainable-investing-in-asia

[26] Global Green Finance Index (GGFI). (2022). Global Green Finance Index 9th Annual Report. Z-Yen. Retrieved from: https://www.longfinance.net/documents/2938/GGFI$_9$$_R$$eport_2$022.04.28$_v$1.1.$pdf$

[27] Tripathy, A. (2022). Careers and climates, Focaal, 2022(93), 32-45. Retrieved from: https://doi.org/10.3167/fcl.2022.930103

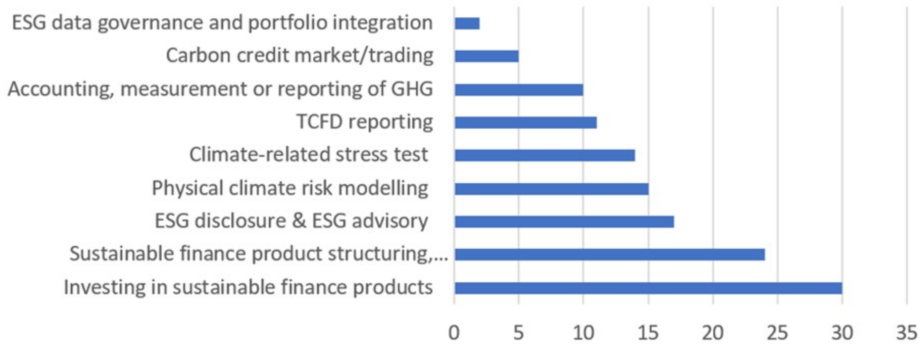

Figure 1: Survey results: Which of the following green and sustainable finance activities does your organization conduct

Participants also reported that they found it more difficult to recruit for green and sustainable finance professionals compared with other job functions. Figure 3 below shows, approximately 80% of respondents found that recruiting for green and sustainable finance talent was more difficult compared to other job functions.

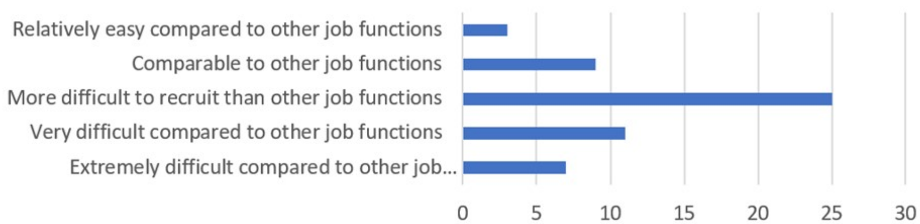

Figure 2: Survey results: How difficult is it to recruit green and sustainable finance talent compared to other job functions?

This challenge appeared to be systemic across the different segments of the financial market. Interviewees with family offices revealed that some employees who were responsible for integrating sustainable finance into the family office's functions were unclear about what their precise talent needs were. In other instances, FSPs struggled to find experts who fill certain specific functions, such as verification of a project's carbon emissions reductions across their broader range of offerings.

This gap in the market is attested by the strong recognition that environmental science should be the foundation academic background of a green and sustainable finance professional. In one interview with an international bank, the interviewee pointed out that the large banks with established training and career development programs were willing to train individuals on the traditional functions of the banking industry, but they were interested in finding employees who were passionate about sustainability topics.

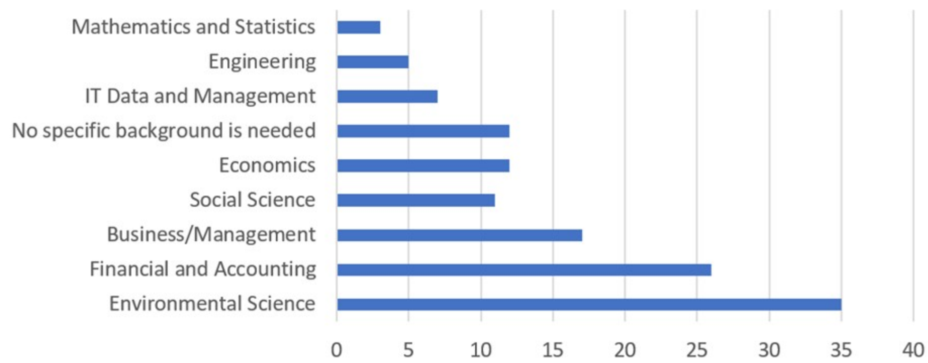

Figure 3: Survey results: What should be the foundation academic background of a green and sustainable finance professional?

While respondents placed a strong emphasis on the importance of environmental science as a foundational academic background for professionals in this space, there was even more agreement about the importance of disclosure regulations as the most pressing issue facing Hong Kong's sustainable financial industry.

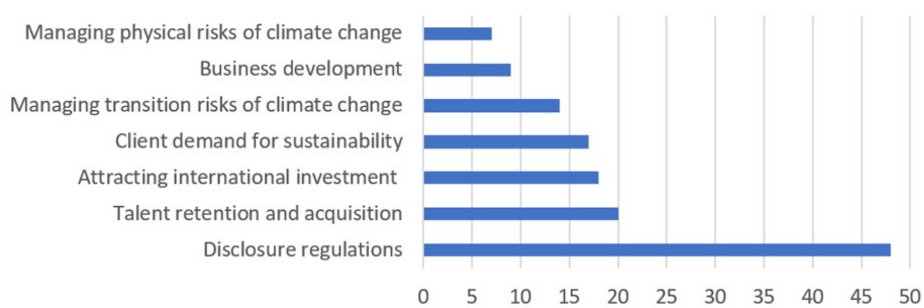

Figure 4: Survey results: What are the most pressing issues currently facing Hong Kong's financial industry in terms of green and sustainable finance?

Such observations correlate with our broader intuition that FMPs recognize the need for climate and environmental experts in the marketplace, and that both disclosure regulations and talent retention are major issues for the market.

4 Methodology

Armed with these insights from the surveys, this paper is motivated to take a grounded approach and dig deeper into the conceptual field that surrounds the market for sustainable finance talent. We invoke the IAD framework as a public policy tool for organizing our analysis of this dynamics underpinning this market.

The IAD framework can be used to examine how institutional processes (rules and norms) help to govern individual and collective decision-making within a policy context and process.[28]

Moreover, it is a powerful approach for helping understand the complex factors that influence the behavior of actors within a community, which in this case, is the sustainable finance market place. The IAD framework is useful for characterizing the 'participants' and 'action situations' which constitute the 'action arena' within which decisions are made amongst a community. Participants in the action arena are influenced by 'exogenous variables' and 'rules' which shape their choices and interactions. These interactions lead to outcomes which can be evaluated and may feedback into the action arena.

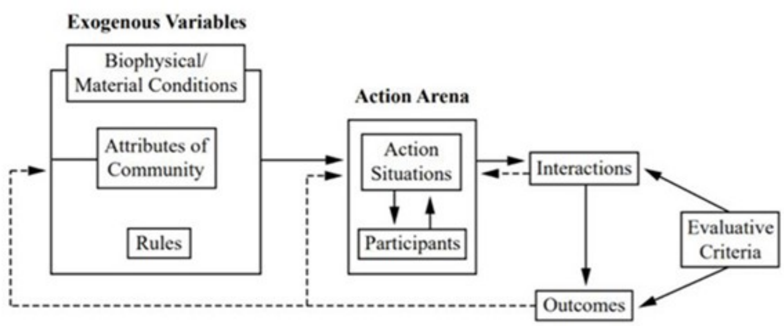

Figure 5: Institutional Analysis and Development (IAD) Framework

The IAD framework was considered appropriate for this study because institutions (the rules and norms that guide the behavior of actors) are critical to understanding and shaping policy outcomes within the financial market place. By understanding the sustainable finance market regulation and policy context, we can begin to identify the types of skills and talent needed for the sustainable finance market to function.

The IAD framework's approach to mapping actors and actions can be used to study a range of institutional arrangements, and is a considered to be a powerful tool for public policy analysis, which this paper argues, extends to the field of environmental economics and sustainable finance. The IAD framework

[28] Ostrom, E., Gardner, R., Walker, J. (1994). Rules, Games, and Common-pool Resources. University of Michigan Press. Image was retrieved from: https://ostromworkshop.indiana.edu/courses-teaching/teaching-tools/iad-framework/index.html

provides a structure for investigating an IFC's talent pool strategies and contextualizes them within unique geopolitical factors, by considering their wider socio-economic and political contexts. For example, as Leslé et al. (2014) show that although Hong Kong and Singapore are often considered regional rivals, there are various idiosyncratic characteristics which may have implications on their complementarity but also their comparability. For example, Singapore has one sole-financial regulator and has primarily served as a financial capital for ASEAN, whereas Hong Kong has multiple regulators and has historically played a role as a financial gateway to Mainland China. Such nuances may implications on the applicability of the IAD framework, as there may be idiosyncratic features and exogenous or confounding variables that may underpin or influence a country's sustainable finance regulation and by extension the market for talent.[29]

Thus, like any framework, caution should be exercised when applying the IAD framework. In particular, Cashore & Bernstein (2023) warn against the use of the IAD framework as a tool to claim that a certain policy has resulted in a policy outcome.[30] We avoid this potential misinterpretation of the IAD framework by avoiding any causal claims about the impact of financial regulations or talent-market development policies and actions. Rather, we simply use the IAD framework as a means to structure our description of global IFC's efforts to develop climate finance regulations and the implications for the labor market.

5 Method

To compliment the observations from the survey, interviews with sustainalbe finance market experts (n=16) in Hong Kong were held. The interviewees consisted of representatives from banks, accounting firms, management consultants, family office investors, NGOs, and academics. Additional desktop research was conducted to identify different talent-development strategies emerging across four IFCs which are provided as case studies.

6 Discussion

6.1 The Climate Finance Action Arena

We use the IAD framework to view the financial market as an action arena within which FMPs interact to exchange financial assets. The action situation

[29] Leslé, V., Ohnsorge, F., Kim, M., Seshadri, S. (2014). Why Complementarity Matters for Stability—Hong Kong SAR and Singapore as Asian Financial Centers, International Monetary Fund Working Paper, WP/14/119. Retrieved from: https://www.imf.org/external/pubs/ft/wp/2014/wp14119.pdf

[30] Cashore, B., Bernstein, S. (2023). Bringing the Environment Back In: Overcoming the Tragedy of the Diffusion of the Commons Metaphor. Perspectives on Politics, 21(2), 478-501. Retrieved from: https://doi.org/10.1017/S1537592721002553

for green and sustainable finance may be further specified as the process of directing capital towards investments that promote sustainability objectives, while also meeting conventional risk-reward considerations and parameters. This can involve the issuance, trading, and management of sustainable finance products (e.g., green bonds, sustainable loans, and ESG funds) where the proceeds are used to support sustainability goals, or where the underlying entity, or entities, is committed to transitioning their operations to be able to support sustainability goals. This section begins by identifying the institutions that are put in place by central banks and financial regulators to support sustainable finance market activities. Then we identify the other FMPs and explain how these institutions influence their behavior and by extension, their talent-related needs. This paves the way for the final section which surveys how different financial markets around the world are now making efforts to plug these gaps.

6.1.1 Institutions in sustainable finance

Behind the scenes of the IFCs are the central banks and financial regulators who shape the sustainable finance landscape by developing and enforcing the rules and norms that guide financial market behavior. By viewing their roles through the lens of the IAD framework, we can see how these FMAs can establish regulations and disclosure requirements that encourage the integration of ESG factors into financial decision making. There is general consensus that demand for sustainable finance talent is driven primarily by regulatory developments to improve transparency and disclosures related to the sustainability risks and impacts facing corporates and non-financial corporates across major economies. Below, we highlight the recurring policy tools that our interviewees suggest is impacting the sustainable finance strategies of our respondents from the financial market.

6.1.2 Climate Finance Taxonomies

IFCs around the world are increasingly adopting sustainable finance taxonomies as tools to help provide issuers and investors with a common language for defining and classifying whether economic activities contribute to their environmental objectives. By defining what constitutes sustainable finance activities, policymakers can reduce the information asymmetries that currently inhibit investments in climate change mitigation and other projects that can support our sustainability goals.

For example, the EU Taxonomy for Sustainable Activities establishes criteria for determining which economic activities can be considered environmentally sustainable. FMPs that invest in activities which comply with the criteria set out in the EU Taxonomy can be more confident that their funds are compliant with social/environmental norms and are less likely to be challenged for greenwashing.

Taxonomies typically form part of a wider body of reporting and disclosure regulations and their development may be coordinated with other policies such as the EU Sustainable Finance Disclosure Regulation and the EU Green Bond Standard, which help to provide more clarity about who is required to use the EU Taxonomy and how they are expected to use it. Such regulations are anticipated to help reduce the risks of greenwashing and simplify the means of communicating impact. Other taxonomies such as the People's Bank of China Green Bonds Endorsed Project Catalogue, and the Climate Bonds Initiative (CBI) Taxonomy have also served as reference points for issuers to label financial products and offerings based on the environment contribution they portend.

Issuers will have to understand how to acquire such label, and to work internally throughout their respective organizations to develop the carbon accounting and other environmental impact measurement methodologies to ensure that they can provide the data required to be recognized as taxonomy-aligned. However, the uncoordinated proliferation of taxonomies across global markets also suggests that in the immediate future, there will be a need for experts who are familiar with the varying definitions laid out in different jurisdictions' taxonomies. Markets such as Hong Kong, Singapore and the ASEAN region are developing their own taxonomies. Their development and use will require localized knowledge about sustainability but the application of financial market labelling.

6.1.3 Sustainability Standards Reporting

IFCs are placing more emphasis on the availability of rigorous, reliable and comparable sustainability information that can enable informed investment and economic decisions. There are increasing calls for companies to provide high-quality, globally comparable information on sustainability-related risks and opportunities. Doing so can help to promote the proper functioning of capital markets, support the integration of the costs of negative externalities into firm valuations and build trust, efficiency, transparency and accountability throughout the system.

The International Sustainability Standards Board (ISSB) is currently in the process of rolling out two series of standards IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information (draft S1) and IFRS S2 Climate-related Disclosures (draft S2), which propose how how companies can disclose their sustainability related information. Notably, the draft S2 integrates Task Force on Climate-related Financial Disclosures (TCFD) Recommendations and the Sustainability Accounting Standards Board (SASB) approach to disclosing material information about climate-related risks and opportunities, including guidance on disclosure of transition planning, climate resilience and scope 1, 2 and 3 emissions. Scope 3 emissions are notoriously difficult to measure accurately, and there will be a growing need to develop tools and models to support this requirement.[31]

Underpinning an organization's ability to meet such reporting requirements will be the teams of technical experts who are familiar with the carbon account-

[31] International Financial Reporting Standards (IFRS, 2020). Climate-related Disclosures. Retrieved from: https://www.ifrs.org/projects/work-plan/climate-related-disclosures/

ing and life cycle methodologies and can work effectively with their respective organizations, clients or counterparts to accurately and efficiently collect and disclose this information.

6.1.4 Carbon Markets

Carbon markets are being established around the world, thus pricing carbon dioxide and other greenhouse gas emissions. This policy tools is based on market principles that seek to internalize the costs of negative externalities associated with carbon emissions from economic activities into a firm's production costs with the intention of incentivizing the firm to reduce its emissions intensity. While the most prominent carbon markets in the world are cap and trade systems, such as the EU ETS, which are generally along these economic principles, other markets such as Hong Kong have been designed to facilitate voluntary offsets.[32] In the offset markets, companies can purchase carbon offsets from project developers as a means of reducing companies' emissions.

While it is not the purpose of this study to comment on the efficacy of either pricing system, it is likely that either system requires professionals who are deeply familiar with the carbon accounting methodologies that are used to verify the emissions of underlying firms and investees, but also the emissions impact of a project developed for sale in the markets.

6.1.5 Assessment of Environmental and Social impact

Under globally recognized investing principles such as the UN Principles for Responsible Investing and IFC's Equator Principles, the application of environmental and social impact assessments is becoming mainstream. In markets such as Hong Kong, certain infrastructure projects are required by ordinance to conduct Environmental Impact Assesments (EIAs). In such instances, project developers need to produce regulated reports on the environmental impact of large-scale infrastructure to ensure that projects meet national/international best practices, standards and other command-and-control policies or environmental regulations. The availability and credibility of such assessments provided by companies in the real economy will be critical to ensuring that IFCs can maintain their reputations as sustainable finance hubs.

6.1.6 Climate Risk Modelling

IFCs are also working to increase their capacity to manage physical and transitional climate risk analysis. The demand for experts who understand the complex linkages between climate and sustainability factors and a company's assets and operations will increase, as will the demand for those who help companies identify and navigate the transition towards climate neutrality.

[32] South China Morning Post (2022). Green Finance: Hong Kong Close to Setting Up Voluntary Carbon Trading Platform to Tackle Climate Change, says Bourse CEO. South China Morning Post Retrieved from: https://www.scmp.com/business/banking-finance/article/3193438/green-finance-hong-kong-close-setting-voluntary-carbon

The TCFD framework for monitoring, assessing and framing the response to climate risk, has been of tremendous impact since it was established in 2015, almost a decade ago, and is now deeply entrenched into sustainable finance reporting norms. Organizations will need experts with the knowledge and skills to understand the complex and evolving nature of climate risk and assess its unique impacts in regions and economic activities and an entity's financial health and decision making. Integrated assessment modelling will become increasingly critical for how financial institutions navigate the growing pockets of scientific data and insight between geological and human systems.

While a recent study by the Hong Kong Exchange (HKEX, 2022) finds that Hong Kong companies have begun to make progress in reporting climate-related risks, the report recommends that issuers obtain assurance of their ESG information, further emphasising the important role that policies will have in driving talent needs.[33]

6.2 Actors

Having identified the institutions shaping the sustainable finance market we proceed to identify the actors involved in its operation and discuss how their functions are impacted by these institutions. In particular, we discuss the role of institutional investors, public authorities, investees, other financial service providers, and civil society. Each actor has their own interests and objectives, such as achieving climate-aligned financial returns, raising funding for sustainable projects, or may be in the business of helping an organization achieve one or the other.

To achieve their goals, the industry requires a skilled workforce that can effectively incorporate ESG practices. Based on our observations and armed with the IAD framework, we can begin to identify the stakeholders and relationships that characterize this space. This paper proposes figure XX below, as a basis for mapping the various stakeholders in the action arena, and the institutions they are subject to.

With the convenient heuristic provided in the UK Government's Green Finance Strategy the above framework seeks to map the landscape for sustainable finance by first distinguishing between financing of green and the greening of finance to help map this landscape .

In the left-panel, the real economy is further divided between the public sector, and the private sector. Both groups of stakeholders own and operate assets that may have an impact on efforts to fight climate change, however, the public sector is also responsible for the sectoral-level policies that shape the markets that the private sector operates in. The different economic activities and sectors such as energy, buildings, transport and agriculture, will require unique specialists who understand the scientific, technical, economic and financial implications

[33] Hong Kong Exchanges and Clearing Limited (2022). 2022 Analysis of ESG Practice Disclosure. Retrieved from: https://www.hkex.com.hk/-/media/HKEX-Market/Listing/Rules-and-Guidance/Environmental-Social-and-Governance/Reports-on-ESGPD/esgreport$_2$022.*pdf*

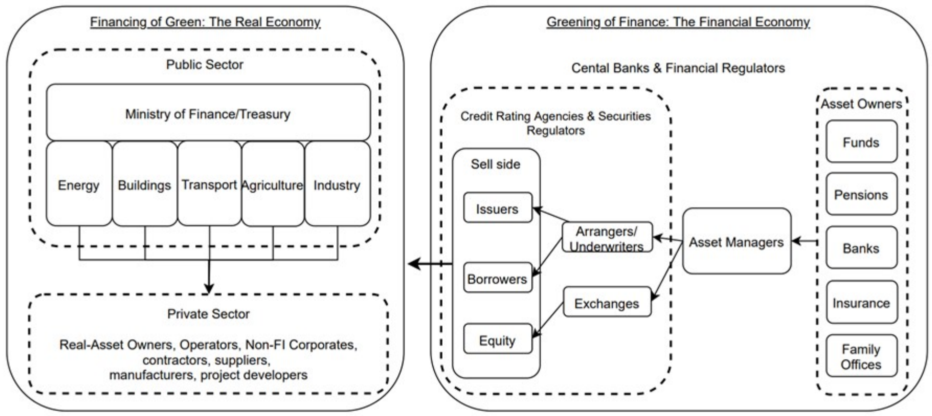

Figure 6: Landscape of sustainable finance actors (author's impression)

of climate change in their fields.

These entities will be seeking might seek to use taxonomies to raise finance for climate-aligned infrastructure investments, or they will need to use geographic information systems (GIS) to monitor and manage their physical risks exposures. In other cases, the representatives of these public and private entities will need to communicate such risks to external stakeholders which could be citizens, customers, regulators or potential investors.

The public and private sectors of the real economy also participate as issuers and investors in the financial economy, which is characterized by the right-panel. Issuers, institutional investors such as commercial banks, insurance companies, pensions and other funds, and the firms which support the trade of securities are under increasingly stringent regulations regarding what and how they report, and in some cases, under tighter instruction to abide by investment mandates that incorporate sustainability.

These stakeholders are supervised by central banks and financial regulators, many of which have become increasingly active in examining the implications of climate change on their respective mandates. The need for talent will likely also be felt among governments, central banks and financial regulators as arbiters of economic growth, inflation or price stability. Responding to the implications of climate change to the mandate of such authorities will require a diverse set of skills and knowledge, particularly in emerging markets where climate change risk may have immense impact on economic and financial stability. Both supervisors and the supervised will require skilled individuals who understand the scientific, policy and management-related elements of sustainable finance.

Other will also have a role in the sustainable finance market of the future. The family offices we interviewed for example, expressed their awareness and interest in the field, but also their concern that they may not have the capacity to stay abreast of markets developments as their peers.

Market facilitators and service providers including rating agencies, green bond verifiers, and sustainable finance data providers and stewards will also need to increase their teams to keep up with the influx of demand for products and services that can support the integration of sustainability into the investment process. Experts will be needed to conduct both climate related financial disclosures, which identify an organizations exposure to climate risk, and climate financial risk assessments which traces how climate exposures impact the securities and liabilities of firms, and provides this information for investors. Exchanges will also serve as platforms for the trading of green and sustainable financial products, enabling price discovery and liquidity. They may also develop listing standards and sustainability indices to promote ESG-aligned investments and will inevitably require knowledge of market operations, trading technology, and ESG criteria, so they can develop strategies to provide clients with the services they require. Credit rating agencies may, in the long term, also be empowered with sufficient data and modelling capabilities to determine how financially material sustainability information can inform their ratings assessments.

Multilateral Development Banks and Development Finance Institutions have long been champions of sustainable finance, they are deliberately excluded from figure XX as their roles and strategies vary dramatically. For example, the International Finance Corporation provides both advisory and investment services to public and private sector stakeholders across the financial market, on the other hand, smaller infrastructure development banks may have narrower mandates. Despite their inclusion, these organizations have many capacity building offerings that can be used to compliment an IFC's overall sustainable finance agenda. Finally, it will be worth considering the role of civil society, in particular academia, civil society organizations and the media who can push the boundaries of sustainable finance through their respective societal roles.

7 Country Case Studies

Markets around the world have made similar efforts and this is becoming an increasingly competitive space. This following section surveys select features of different markets' strategies to boost the availability of sustainable finance expertise and is intended to provide readers with a wider sense of the macro-approaches to talent management that are being tested around the global market place. Their inclusion is not a statement of whether they are suitable in different market contexts, but it is hoped they can help FMAs stay abreast with international best practice and consider what may be suitable in their respective jurisdictions.

7.1 United Kingdom

The UK is widely considered to be among the global leaders on climate action. It was ranked first in the Global Green Finance Index (GGFI 8) in 2021, the same year it hosted the UNFCCC COP26 in Glasgow and issued the first UK

Green Gilt to raise £6 billion. In June 2019, it became the first major economy to pass laws requiring a reduction of greenhouse gas emissions to net zero by 2050.[34]

The UK Green Finance Strategy outlines the plans to increase investment in sustainable projects and infrastructure to meet the country's legal climate target.[35]

The Strategy aims to ensure that financial risks and opportunities from climate change are integrated into mainstream financial decision making, by combining the country's low carbon and environmental expertise with its financial services sector. Additionally, it outlines how commercial opportunities arising from the global demand for training and qualifications in sustainable finance will be captured through leveraging its world-renowned network of universities and charterships.

The UK has a wide variety of professional training programs to provide finance practitioners with the necessary skills and expertise to operate in the climate finance and ESG space. The UK's chartership bodies have been instrumental in delivering this training. In 2018 the Chartered Banking Institute launched the Green Finance Certificate (which has subsequently been adopted by the Chartered Institute for Securities and Investment), and the Chartered Financial Analyst (CFA) Institute UK also developed an ESG Investing certificate.

More notably, in July 2019, following the launch of the UK Green Finance Strategy, the UK Government and the Green Finance Institute launched the Green Finance Education Charter to help build skills and capabilities in sustainable finance.[36] This Charter brings professional bodies together to commit to integrating sustainable finance principles into their education and training programs. In particular, it aims to ensure that all FSPs have the vital skills necessary to accurately assess climate-related risk and opportunities.

Separately, another group of professional institutions has launched the Professional Bodies Climate Action Charter (PBCAC), aiming to align the UK's professional bodies (outside of the traditional financial sector) with the Paris Agreement and the UN SDGs.[37] The PBCAC is currently supported by nine professional bodies representing more than 400,000 professionals and a further 300-member organization. It binds members to three overarching commitments to align with the 1.5°C pathway, unify their voice to lobby for long-lasting change, and to empower and develop their members.

Early signatories of the PBCAC include the Energy Institute, the Institute of Chartered Accountants in England and Wales (ICAEW), the Institute of

[34] HM Government (2019). The Climate Change Act 2008 (2050 Target Amendment). UK Government. Retrieved from: https://www.legislation.gov.uk/ukdsi/2019/9780111187654

[35] HM Government (2019). Green Finance Strategy. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment$_{data}/file/820284/190716_{BEIS_{Green_F}}$

[36] UK Green Finance Institute (2022) Green Finance Education Charter. UK Green Finance Institute. Retrieved from: https://www.greenfinanceinstitute.co.uk/green-finance-education-charter/

[37] UK Professional Bodies Climate Action Charter. (2022) The Charter. UK Professional Bodies Climate Action Charter. Retrieved from: https://professionalsclimatecharter.org/

Materials, Minerals and Mining, the Chartered Institute of Ecology and Environmental Management (CIEEM) and the Royal Pharmaceutical Society.

Some of the UK's chartership institutions have a strong presence across many markets and there is an opportunity for IFCs to engage these charterships and to seek their support with skills development that align with their own policies. This could apply to both financial and non-financial sector chartership institutions. For example, the Energy Institute, which has branches in many countries, can engage local engineers and technicians who will be critical to generating the climate-related data that feed into the financial market.

In addition to coordinating its charterships, the UK has also leveraged the strengths of the country's world-renowned university networks to train students and professionals on the theoretical and practical elements of sustainable finance. For example, the University of Oxford created a short course for UK government policy officials to learn foundational knowledge of sustainable finance. It was trialed by UK policy and trade officials across 30 different High Commissions, Embassies, Consulates, and Missions across North America, Latin America, Southeast Asia, and Australasia between 2018 and 2019.

7.2 European Union

The numerous financial centers spanning across the European Union have moved forward on their respective financial systems. This comes as no surprise given the EU's global role in shaping the financial regulations that many global markets are now working with. Policies such as EU Green Bond Standard and the EU Taxonomy on Sustainable Finance which forms part of the wider Sustainable Finance Disclosure Regulation (SFDR) framework, have had a strong impact on global norms. Whilst building its sustainable finance regulatory framework, the EU has also begun to integrate talent management and development of local knowledge and expertise on sustainability.

Notably, the European Commission's Green New Deal recognizes that "proactive re-skilling and upskilling are necessary to reap the benefits of the ecological transition" and has proposed the creation of a European Social Fund to support Europe's workforce in this transition. A key feature of this has been to boost the sustainable finance literacy of all adults which is framed through the EU and OECD joint EU/OECD-INFE financial competence framework which forms part of the EU's Capital Markets Action Plan.[38] The objective is to build general financial competency for adults, and to coordinate efforts to build financial literacy across member states.

Generally, the framework aims to build individuals' awareness, competency and confidence in making financial decisions, while the core elements of the skill framework include general financial literacy, planning and management. More importantly, the framework has a strong emphasis on enabling and motivating

[38] European Commission (2022a). Financial Literacy: Commission and OECD-INFE Publish Joint Framework to Improve Individuals' Financial Skills. Retrieved from: https://ec.europa.eu/commission/presscorner/detail/en/IP$_2$2$_2$83

adults to learn more about environmental and social impacts of goods, services and financial products.[39]

For example, it identifies training adults about the ESG risks and rewards associated with different savings and investment products; how to understand industrial policies, and the financial landscape and system may be impacted by climate change or other environmental issues/things like the pandemic; to detect greenwashing and to understand potential climate-related risks and how to insure against them.

Increasing awareness and interest in sustainability, and building an understanding of the risks that sustainability issues pose to the financial system can build critical mass in the field. In the long run, this could help embed mandate shifts among asset owners in favor of sustainability as more pensioners demand that ESG-aligned investing becomes a default-aspect of their portfolio management approaches.

Such an approach is a stark reminder that the 'greening' of finance requires a change in systems-wide thinking. By empowering the average citizen in the EU to take action on climate and sustainable investing, policymakers are addressing a key barrier to potentially changing the mandates demand for pensions/asset owners, making it easier to switch to a default ESG fund approach and continue to scale capital allocations towards sustainable financial products.

7.2.1 Engaging the scientific community

The EU has also made a conscious effort to increase the collaborative research and training between public scientists and engineers, and the financial market. The EU's Joint Research Centre (JRC) is the European Commission's science and knowledge service which employs scientists to carry out research in order to provide independent scientific advice and support to EU policy.

The JRC has fed into policy processes such as the formation of the EU Taxonomy, but it also offers a Summer School on Sustainable Finance that is open to academics, policymakers and professionals, with the goal of exposing researchers to the most demanding issues faced by the industry and helps them produce policy-relevant research.[40] At the same time, it provides independent scientific advice to policy, reaffirming the crucial role of research in informing policy-making.

Specialist discussions build interest in the field, create closer linkages, knowledge sharing and also career advancement opportunities for sustainable finance specialists. Research forums held to bring closer ties between financial regulators, central bankers, academia, and industry can enrich the debate on sustainable finance.

[39] European Commission (2022b). Financial competence framework for adults in the European Union. European Commission. Retrieved from: https://ec.europa.eu/info/sites/default/files/business$_{e}conomy_{e}uro/banking_{a}nd_{f}inance/documents/220111-financial-competence-framework-adults_{e}n.pdf$

[40] EU Joint Research Centre (2022). 4th JRC Summer School on Sustainable Finance. European Commission. Retrieved from: https://joint-research-centre.ec.europa.eu/events/4th-jrc-summer-school-sustainable-finance-2022-07-07$_{e}n$

7.2.2 The Irish Approach

Member States within the EU also have the freedom to develop their own strategies. The Government of Ireland for example, launched Skillnet Ireland in 2019 as a business support agency and network to develop skills and leadership capacity to advance ESG best practice across Ireland's FSPs. Under the Irish Government's Ireland for Finance Action Plan 2021, the Sustainable Finance Skillnet has been tasked to further develop sustainable finance skill programs for professionals in the Irish financial services sector.[41]

The Sustainable Finance Skillnet has also partnered with CFA Ireland to launch the CFA UK Certificate in ESG Investing in Ireland, delivering the benchmark knowledge and skills required by investment professionals to integrate ESG factors into the investment process. A major focus of their training objectives is to develop expertise surrounding the EU's Sustainable Finance Disclosure Regulation (SFDR). Activities included the development of a global first-of-its-kind EU Taxonomy course which enables investment professionals to gain a firm understanding of the EU taxonomy and its practical implementation to facilitate sustainable investment.

The developments on the EU's sustainable finance agenda have impacted disclosure regulation in markets globally. Financial institutions will need to stay abreast of changes to investor behaviors and policies. The training and content offered to professionals in European financial centers which are at the cusp of this regulatory change, will likely be immensely beneficial to FMPs in other IFCs. Knowledge hubs can coordinate efforts to build capacity and talent, but they need to have a clear and concerted outreach plan. The Irish Strategy is an example of how this may be accomplished. There is a strong interest and demand in training that helps financial market practitioners navigate the evolving regulatory space. The EU has been driving the policy discussion on sustainable finance, and their decisions will have implications for financial markets globally. There is an opportunity to find out what types of relevant training they are offering that could be aligned with offerings in foreign markets.

7.3 Singapore

One unique feature of Singapore's approach to developing sustainable finance talent has been to formally outline the skills considered necessary for the market to function. In February 2022, the Monetary Authority of Singapore (MAS) and the Institute of Banking and Finance Singapore (IBF) outlined 12 technical skills and competencies needed for individuals to perform various roles in sustainable finance (see Figure 6).[42]

[41] Irish Government (2019). Skillnet Ireland. Retrieved from: https://www.skillnetireland.ie/

[42] Monetary Authority of Singapore (2022). IBF and MAS Set out 12 Technical Skills and Competencies in Sustainable Finance. Monetary Authority of Singapore. Retrieved from: https://www.mas.gov.sg/news/media-releases/2022/ibf-and-mas-set-out-12-technical-skills-and-competencies-in-sustainable-finance

The Sustainable Finance Technical Skills and Competencies (SF TSCs) are part of the IBF Skills Framework for Financial Services, which provides information on occupations and job roles, career pathways, and training programs for skill upgrading and mastery.

The SF TSCs cover a range of thematic and functional knowledge topics. Thematic topics include climate change policy developments, natural capital, climate and green taxonomies, carbon markets and decarbonization strategies. Functional knowledge topics include how sustainability is applied across major functions in the financial sector, such as sustainability risk management, sustainability reporting, sustainable investment management, and sustainable insurance and re-insurance solutions.

These TSCs can be applied to a variety of financial sector professionals in job roles within Sales, Distribution and Relationship Management, Product Solutions and Management, Operations, Risk Compliance and Legal. These TSCs could also help create sustainable finance careers with positions such as Chief Sustainability Officer, Sustainability Reporting and Investor Relations, Advocacy and Stewardship, Sustainability Product Specialists.

Moreover, financial institutions and training providers are encouraged by IBF and MAS to design training programs around the SF TSCs. Banks, asset managers and insurers have the flexibility to adopt SF TSCs relevant to their employees and organization. IBF has stated that it will work closely with the industry to curate high quality training programs, and onboard training providers whose curriculum are aligned with the SF TSCs. Similarly, individuals and professionals can reference the specific knowledge and skills as a guide to upskill, pivot into or progress in the relevant financial sector sustainability roles. Participants who enroll in IBF-accredited training programs can defray up to 90% of training expenses under the IBF-Standards Training Scheme grant.

Meanwhile, Singapore's universities are also supporting public efforts to build skills and knowledge in this field. For example, in June 2020, Singapore Management University (SMU), alongside the World Bank Group (WBG) and Infrastructure Asia (Infra Asia), developed a capacity building program for senior and mid-level regional government officials in the infrastructure sector. The program combines WBG's experience on capacity building programs and expertise in private sector financing and structuring, and Infra Asia's deep knowledge of the ASEAN region. SMU serves as the academic partner delivering the program, anchored by faculty from its schools of Business, Economics and Information Systems. The program aims to serve as an interactive and collaborative platform comprising real-life case studies, site visits and fireside chats with international thought leaders.

7.4 Hong Kong S.A.R

Hong Kong has historically served as a convenient gateway for international investors entering Mainland China's markets, which have made sustainable finance a strategic imperative. Hong Kong has recently begun to explore how it can leverage its unique geopolitical position to become a global financial center

Thematic SF TSCs	
TSC	TSC Description
Taxonomy Application	Analyze and shape organization's strategy, policies, practices and relevant business activities in response to key domestic, regional and global taxonomies that classify green and transition economic activities.
Carbon Markets and Decarbonisation Strategies Management	Lead organization's strategy and policies in response to current and projected carbon policy, market developments and decarbonisation strategies, and provide support for the organization and clients in their efforts to decarbonise and become net-zero.
Natural Capital Management	Develop market research on natural capital and lead organization's strategies and policies in response to natural capital policy and market developments, to support decision making and organizational dealings.
Climate Change Management	Synthesize information on climate change and climate policy developments to shape the organization's strategies and policies, products and/or services.
Functional SF TSCs	
TSC	TSC Description
Impact Indicators, Measurement and Reporting	Analyze, monitor and report impact of sustainability actions, and lead the organization in setting impact mission and targets for the organization or customers.
Sustainability Reporting	Lead development of organization's sustainability reporting and accounting policies and processes in line with regulatory requirements and international best practices.
Sustainability Risk Management	Develop frameworks, strategies and policies for managing sustainability risks, for the organization to minimize and mitigate risks and impact to the organization.
Sustainable Lending Instruments Structuring	Structure key sustainable lending instruments, which includes bonds, loans, project and trade financing, derivatives, blended finance, and develop incentive mechanism to encourage adoption of these instruments.
Sustainable Investment Management	Lead organization's strategies on sustainable investment, and implement sustainable investment concepts and approaches on portfolio management.
Sustainability Stewardship Development	Lead the development of the organization's stewardship strategy, focus areas, policies and practices, and implement stewardship to achieve organization's investment and sustainability goals.
Sustainable Insurance and Re-Insurance Solutions and Applications	Develop and underwrite new and/or existing sustainable insurance and/or re-insurance solutions which are aligned with international best practices, and support customers in improving their sustainability performance over time.
Non-Financial Industry Sustainability Developments	Synthesize sustainability-related risks, opportunities and market developments of the non-financial industries, and their impact and application to the organization and the financial sector.

Figure 7: Singapore's Sustainable Finance Technical Skills and Competencies (SF-TSCs)

for China.

The Hong Kong Monetary Authority (HKMA) and the Securities and Futures Commission (SFC) co-initiated the Green and Sustainable Finance Cross-Agency Steering Group (CASG) in May 2020 and promulgated a strategic plan to strengthen Hong Kong's financial ecosystem in the same year. To support these objectives, the CASG has launched the Centre for Green and Sustainable Finance (CGSF) to serve as a cross-sector platform that coordinates efforts by financial regulators, government agencies, industry stakeholders and academia in capacity building and policy development.[43]

Although the progress on developing a clear and concerted strategy for sustainable finance talent has been slow, some notable developments have been driven by CASG in developing Hong Kong into a sustainable finance hub. For example, the CGSF has established a capacity building working group to develop a common Green and Sustainable Finance (GSF) qualification framework, support practitioners and young people to take up GSF training, and provide young people with practical industry experience.

Furthermore, financial professionals in the ESG space have been included in the Hong Kong's Quality Migrant Admission Scheme (QMAS). The scheme seeks to attract high-skilled international talent by facilitating their immigration through benefits such as a requirement waiver to secure a job before settling in Hong Kong and the flexibility to bring dependents to the city for settlement.[44] Inclusion on this list is specifically targeted at attracting experienced professionals with expertise in ESG financing, investment, product development, disclosure/reporting/standards, rating assessment, risk management, regulation and compliance, or investment research and analysis. Applicants are required to have at least a bachelor's degree in certain environmental science, sustainability, commerce, finance or other relevant disciplines in addition to on-the-job training or industry courses or programs. They also need practical experience related to climate change, integrating climate-related factors into risk and investment management, carbon footprint calculation, stakeholder management, or other related fields.

Most recently, the HKMA has begun subsidising eligible sustainable finance training providers who register their programs under an HK$200 million (US$25.6 million) three-year pilot scheme. The Scheme will run for a pilot period of three years and is administered by the Secretariat of the Centre for Green and Sustainable Finance.[45] This came on the heels of the government's launch of the Sustainable Finance Internship Initiative, which will give learners an opportu-

[43] Hong Kong Green Finance Association (2022a). Latest Developments of Green and Sustainable Finance First Half 2022. Hong Kong Green Finance Association. Retrieved from: https://www.hkgreenfinance.org/wp-content/uploads/2022/07/HKGFA-Latest-Developments-of-Green-Sustainable-Finance-First-Half-2022.pdf

[44] HKSAR Government (2022a). Talent List Hong Kong Financial Professionals in Environmental, Social and Governance (ESG). Retrieved from: https://www.talentlist.gov.hk/en/iso13$_f$*ull.html*

[45] HKSAR Government (2022b). Pilot Green and Sustainable Finance Capacity Building Support Scheme. Hong Kong Monetary Authority. Retrieved from: https://www.greentalent.org.hk/Programme

nity to gain industry exposure with participating organizations.[46]

7.5 Takeaways from international experiences

Turning IFCs into a successful sustainable finance hub, will require large-scale systems change. Financial markets worldwide are incorporating sustainable finance into their decision-making processes due to regulatory changes. Governments are collaborating with private sectors, training providers, charterships, and academia to develop the necessary skills and knowledge. Singapore's SF TSCs framework categorizes the abilities and knowledge necessary for the low-carbon transition. The UK and Ireland have developed effective engagement and outreach strategies for capacity building. The EU's Capital Markets Action Plan exemplifies how to educate people on the importance of sustainability. Hong Kong can learn from these efforts to develop their own sustainable finance talent markets. It is necessary to create a shared understanding of sustainable finance objectives and processes to ease policy barriers and expand project pipelines. We provide the following policy recommendations as potential steps that IFCs can take to begin the process of building their own sustainable finance talent markets:

Formalize the market for skills development

- Develop a systematic skills framework: Identify key skills and knowledge areas and competencies required for professionals in sustainable finance, and provide guidance on which skills could be applicable for different types of organizations or job functions.

- Align efforts of existing charterships and professional associations: Coordinate with international bodies that have developed green and sustainable finance training offerings to enhance local efforts.

- Enhance access to available training: Offer information and easier access to the training currently available. Classify existing programs based on the talent gap they fill (undergraduates, general interest, vocational training, specialized knowledge, etc.) and the sustainable finance topics they cover (carbon pricing, ESG strategies, taxonomies, risk management, etc.)

- Build a comprehensive subsidy and training incentives package: Use the skills framework, and the enhanced access to available training to remove financial or informational barriers preventing training uptake.

- Develop comparable certification procedures: Learn from the licensing of professionals in other areas of the financial market (e.g., wealth management or securities intermediaries) to establish certification procedures for sustainable finance careers.

[46] Hong Kong Monetary Authority (2022). GSF Internship Opportunities. Hong Kong Monetary Authority. Retrieved from: https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/green-and-sustainable-finance/gsf-internship-opportunities/

- Regularize environmental professional qualifications: Extend certifications provided by professional bodies to denote expertise between the intersection of environmental impact assessments and sustainable finance.

Promote engagement with all stakeholders

- Promote sustainable finance training across government agencies: Encourage government agencies and public bodies to adopt sustainable finance training to facilitate policy implementation and project pipeline expansion.
- Empower universities: Foster interdisciplinary training at universities to prepare graduates for impactful careers in sustainable finance, promoting a balance between academic education and professional training.
- Integrate sustainability education into general financial literacy: Increase public awareness of green finance by incorporating sustainability concepts into general financial education.
- Encourage collaboration with scientists and researchers: Foster partnerships with scientists, academics, and public research bodies to support the sustainable finance market with specialized knowledge.

8 Conclusion

By examining more theoretical approaches to analyzing the market for such talent, this paper has sought to improve awareness about the stakeholders and their unique talent-related challenges. It aims to help IFCs respond to the growing need for a workforce in the financial market that can contribute to the global sustainability agenda, and aid in the development of strategies to reduce the risks of skills-related greenwashing in the financial market.

Each country has shown unique approaches to tackling the question of talent management in sustainable finance. For example, the Monetary Authority of Singapore takes a top-down approach to systems building by providing a framework for necessary skills. The framework is sufficiently generalized that it could be adopted in foreign markets. Meanwhile, the UK's many different professional bodies covering various professional sectors banded together in order to coordinate their learning materials and development strategies, such materials can be shared and recognized internationally through these associations' global networks.

On the other hand, Europe's leadership in sustainable finance legislation has impacted markets globally, and many IFCs globally will likely be affected by this wave of sustainable finance regulations and practices. Learning from the various training providers, professional bodies, academic and research networks across the EU will be valuable for global markets. And finally, while Hong Kong is somewhat of a latecomer to sustainable finance, the Special Administrative Region has shown signs that it will provide subsidies and preferential immigration status to talented professionals who can help green its financial system.

8.1 Limitations of research

As a qualitative study, this paper did not set out to test whether or to what extent any actions or events have impacted the talent market for sustainable finance. Data around the sustainable finance job market (which is quite a nascent field) remains limited, and the multiple layers of interaction between the outbreak of COVID-19 and disruptions caused by Artificial Intelligence allow for many possible theories regarding the future of work in this field. Moreover, while the case studies have shown the different approaches that governments are taking to increase the availability of skills and knowledge around sustainable finance, it might be naïve to suggest that a policy has made a particular impact, particularly in the absence of suitable a counterfactual.

It is also recognized that both surveys and interviews of experts or practitioners within this field, may introduce confirmation biases surrounding the perceptions of the magnitude of this risk, a finance professional who has never needed to consider climate change or sustainability issues might report that such themes are irrelevant and would therefore be unconcerned about the need for such skills. While such an opinion may be valid, this paper is specifically intended to contribute to a topic that is both a specialist's field but also a growing policy priority, thus it was more deemed more appropriate that our data collection targeted feedback from field experts.

8.2 Future research

It is hoped that this paper can serve as a starting point for future efforts to study the dynamics occurring within the talent market for sustainable finance. This could be done more quantitatively as more data, possibly from online platforms such as LinkedIn, can be used to help monitor the movements of talent between markets, and to identify the types of job titles, educational backgrounds, and other professional and academic experiences that will become valued in the sustainable finance market of the future. However, this would also require adjustment for differences in social and cultural use of tools such as LinkedIn. Nonetheless such descriptive insight could help to provide a basis for theory testing on the efficacy of policies and strategies to develop talent markets. Finally, further investigation into the strategies of the countries exposed in this study, but also of new markets and other IFCs, would enable more knowledge sharing and enable markets to develop the strategies that are most suitable for their unique contexts.