TASK FORCE ON REVIEW OF RESEARCH POLICY AND FUNDING

REVIEW REPORT

SEPTEMBER 2018

Preface

It was a singular honour for me to be invited by the Chief Executive (CE) as announced in her Policy Address in October 2017 to lead a task force for a holistic review on the research support and funding strategy for the higher education sector in Hong Kong. Along with this invitation, the CE had also committed to set aside no less than $10 billion as additional funding for university research to be disbursed upon the completion and subject to the outcome of the review. To take the matter forward, the Task Force on Review of Research Policy and Funding (the Task Force) was set up in October 2017 under the aegis of the University Grants Committee (UGC) to proceed with the review.

While Hong Kong ranks a respectable position in overall competitiveness, we believe we can do better in the metrics of innovative capacity. The review on research policy and funding has been called at an opportune time as Hong Kong is now presented with the most advantageous environment to advance its potential to become a research hub of the region over the next few years. The enhanced research and development funding committed by the Government, the introduction of new policy of cross-boundary remittance of research funding from the Mainland, coupled with the development of the Lok Ma Chau Loop and the integration with the Greater Bay Area, offer an unprecedented opportunity for Hong Kong to leverage our research excellence, unique resources and infrastructural strengths to propel our continuous transformation into a knowledge-based economy.

In addition to reviewing our current practices, this Report presents recommendations aiming to allocate research funding in a more streamlined and effective manner, incentivise more cross-disciplinary and cross-institutional collaborations, and encourage the sector to engage in research commercilaisation and knowledge transfer with the industry as well as the community. I hope the adoption and implementation of the recommendations made by the Task Force in this Report will help shape the research policy and further the research excellence of Hong Kong with enhanced and balanced support while driving impact.

I would like to convey my heartfelt gratitude to the Members of the Task Force for their wisdom and contribution in taking forward this review.

Their experience in research and dedication to the higher education sector and research industry has been crucial in setting our directions and guiding our discussions.

This Report has benefited from the generous input and feedback we received from the research community in the course of the review and in particular during the consultation period. My appreciation also goes to the UGC Secretariat for its arduous and dedicated support throughout the review process and in preparing this Report.

On behalf of the Task Force, it is my pleasure to present this Report to the Government for consideration. The Report is simultaneously published to the public and I look forward to working with the research community to deliver our vision of uplifting the position of Hong Kong in global competitiveness as a knowledge-based economy.

Professor TSUI Lap-chee
Chairman, Task Force on Review of Research Policy and Funding

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List of Abbreviations

A*STAR	Agency for Science, Technology and Research [Singapore]
AHRC	Arts and Humanities Research Council [UK]
AIDS	Acquired Immune Deficiency Syndrome
AoE	Areas of Excellence Scheme
ARC	Australian Research Council
ARD of MoE	Academic Research Division of Ministry of Education [Singapore]
BBSRC	Biotechnology and Biological Sciences Research Council [UK]
BI	Broad Institute of Massachusetts Institute of Technology and Harvard
CE	Chief Executive
CIHR	Canadian Institutes of Health Research
CRF	Collaborative Research Fund
CRS	Cash Rebate Scheme
ECF	Environment & Conservation Fund
ECS	Early Career Scheme
EIT	European Institute of Innovation and Technology
EPD	Environmental Protection Department
EPSRC	Engineering and Physical Sciences Research Council [UK]
ERA	Excellence in Research for Australia
ERC	European Research Council
ERG	Earmarked Research Grant

ESRC	Economic and Social Research Council [UK]
ESS	Enterprise Support Scheme
EU	European Union
FHB	Food and Health Bureau
GDE	Gross Domestic Expenditure
GDP	Gross Domestic Product
GRF	General Research Fund
HEIF	Higher Education Innovation Fund [UK]
HIV	Human Immunodeficiency Virus
HMRF	Health and Medical Research Fund
IAF	Industry Alignment Fund [Singapore]
ICP	Industry Collaboration Projects [Singapore]
IP	Internship Programme
ITC	Innovation and Technology Commission
ITF	Innovation and Technology Fund
ITSP	Innovation and Technology Support Programme
JRS	Joint Research Schemes
KICs	Knowledge and Innovation Communities [EU]
MGS	Matching Grant Scheme
MRC	Medical Research Council [UK]
MRP	Midstream Research Programme for Universities
NACRI	National Advisory Council on Research and Innovation [Canada]
NCGP	National Competitive Grants Programme [Australia]
NERC	Natural Environment Research Council [UK]

NIH	National Institutes of Health [USA]
NHMRC	National Health and Medical Research Centre [Australia]
NRF	National Research Foundation [Singapore]
NSERC	Natural Sciences and Engineering Research Council of Canada
NSF	National Science Foundation [USA]
NSFC	National Natural Science Foundation of China
ORCID	Open Research Contributor ID
PhD	Doctor of Philosophy
PICO	Policy Innovation and Co-ordination Office
PPR	Public Policy Research Funding Scheme
R-portion	Research Portion
R&D	Research and Development
RAE	Research Assessment Exercise
RCs	Research Councils [UK]
REF	Research Endowment Fund
RGC	Research Grants Council
RIEC	Research, Innovation and Enterprise Council [Singapore]
RIF	Research Impact Fund
RIs	Research Institutes
RTDC	Environmental Research, Technology Demonstration and Conference
SBCs	Small Business Concerns
SF	Self-financing
SPPR	Strategic Public Policy Research Funding Scheme

SPRING	Standards, Productivity and Innovation Board [Singapore]
SSHRC	Social Sciences and Humanities Research Council [Canada]
SSRC	Social Science Research Council [Singapore]
STFC	Science and Technology Facilities Council [UK]
TRS	Theme-based Research Scheme
UGC	University Grants Committee
UICP	The University-Industry Collaboration Programme
UK	United Kingdom
UKRI	UK Research and Innovation
USA	United States of America

Executive Summary

RESEARCH AND DEVELOPMENT (R&D) DIRECTION FOR HONG KONG

Positioned as a knowledge-based economy, Hong Kong has to maintain, and expand as appropriate, a critical mass of researchers who propel relentlessly the frontier of knowledge in various disciplines spanning from science to arts, and crossing the spectrum from technology to social sciences and humanities.

Hong Kong has made great strides in academic excellence over the past decade. As a way forward, consideration should be given to tap on the advancement of knowledge beyond the academia. Industries should be incentivised to join hands with academics and researchers for more engagement in academic-industry collaboration, with an objective to translate academic output into impact on the economy and society, and in the form of product innovations and commercialisation. Developing the holistic value connecting basic research to applied research through translational research is the key to achieve the balance and competitive edge in the ever-evolving international arena.

High quality research with social impact is crucial to the future development of Hong Kong. The term "social impact" should include both tangible and intangible benefits of research outcomes and the specialty of each discipline should be taken into account. Quality research should therefore pass the threshold in both academic merit and potential research impact with demonstrable contributions to be brought to the economy or culture that are beyond the academia.

The Interim Report which was published for consultation on 6 June 2018 made seven recommendations to enhance research policy and funding for Hong Kong. The recommendations received widespread support based on the feedback received during the consultation process. They are now set out below.

RECOMMENDATIONS FOR GOVERNMENT'S CONSIDERATION

Substantial Increase in Research Funding

It is well noted that Hong Kong lags behind in R&D expenditure. As a leap forward to reduce the gap between Hong Kong and the neighbouring jurisdictions in this regard, injection of new funding is required to support research with strategic impact and promote research excellence. Riding on the CE's commitment to doubling the ratio of Gross Domestic Expenditure (GDE) on R&D to Gross Domestic Product (GDP) from 0.73% to 1.5% by 2022, funding for competitive research is recommended to be doubled from the prevailing $2 billion to $4 billion per annum, including the doubling of Research Grants Council (RGC) funding from $1 billion to $2 billion over the same period.

As far as the higher education sector is concerned, consideration should be given to increase competitive research funding via the following means:

(a) to sustain the current funding for research by injecting substantial new money, preferably not less than $10 billion, into the Research Endowment Fund (REF) to make up the shortfall due to the reduction in the annual rate of return;

(b) to rationalise the use of different pots of REF for more effective and flexible deployment of funding resources; and

(c) to diversify the funding sources and boost private R&D expenditure / donations in the research community by introducing a Research Matching Grant Scheme for local degree-awarding universities / institutions.

Sustainable Strategies and Support for Research Talent

To nurture, retain and expand our pool of research talent is of paramount importance in supporting the advancement of R&D and cultivating the research culture in Hong Kong. Promising academics should be provided with opportunities and incentives at their early / mid-career to develop their

potential in full, encourage them to contribute and drive them to research excellence. In this connection, three new fellowship schemes are proposed.

Doctor of Philosophy (PhD) graduates contribute to research significantly. To strengthen the research staff force and to nurture / sustain the development of research talent, education and appropriate engagement as well as training of PhD graduates are very important. In this regard, it is recommended to nurture new research talent by introducing a postdoctoral fellowship scheme under the RGC.

Researchers can only progress if there are suitable opportunities throughout their career. For exceptionally outstanding academics and researchers, a research fellow scheme and a senior research fellow scheme should be introduced to provide them with further and sustained support, allowing them to devote in research and bringing their core competence in research into full play.

Augmenting Support for Research Infrastructure

Better Efficiency and Effectiveness in the Use of Competitive Research Funding

To meet the challenges arising from the increasing number of applications and growing complexity of the selection mechanism, the UGC and the RGC have taken the initiative to conduct the RGC Review which is in two phases. While the Phase I Review completed in May 2017 had covered macro issues such as the RGC's structure, the Phase II Review should include a study of technical issues such as time / commitment of Principal Investigators, quality of assessment, monitoring processes, project renewal, etc.

Strengthening the Effectiveness of the Research Portion (R-portion)

UGC's R-portion, constituting about 23% of the Block Grant, is disbursed to the universities as infrastructure funding to enable universities to provide both the staffing and facilities necessary to carry out research, and to fund a certain level of research. Given UGC's unique role as an independent advisor to the Government on the funding and strategic development of the higher education sector, the UGC is in the best position to conduct a comprehensive and holistic review on the funding mechanism of the R-portion

so as to better meet the requirements of the research ecosystem of the universities. The scope of the review should cover its purpose, the deployment of R-portion within universities, whether "on-costs" (indirect cost) are adequately covered, etc.

Enhancing Support for Collaborative Research

In line with global development, strategies to encourage more cross-disciplinary and cross-institutional collaborations among researchers should be formulated in order to secure critical mass and balance across disciplines and sectors of the research community. In this connection, it is recommended that the UGC should rationalise and / or review the existing three funding schemes under the RGC targeted for research with substantial impact, i.e. Collaborative Research Fund (CRF), Theme-based Research Scheme (TRS) and Areas of Excellence Scheme (AoE), and consider the possible combination of them to form a new scheme to, in addition to catering for the existing and future needs, support proposals from research institutes set up by universities as well as research incentives of strategic priorities.

Strengthening Communication and Coordination across Funding Agencies

Having regard to the wide range of funding support in the higher education sector for research at different stages of development, the Task Force recognises the merits of putting in place a platform aiming to facilitate maximisation of resources and mitigate the possibility of resource overlapping, with a view to achieving a good balance among basic, translational and applied research, and minimising the administrative work to be taken by researchers or research groups.

As a start, it is recommended to strengthen and enhance the coordination among different funding bodies via the setting up of an internal government liaison group to regularly share their research directions and coordinate among them issues of common interests on research. In the long run, it is recommended to consider setting up an overarching research steering council to formulate long-term plan on research policy and funding, to standardise the operating procedures of various funding bodies to enhance efficiency and effectiveness, and to better integrate research into the innovation ecosystem.

Centralisation of Data on Research

Consistent and unique researcher identifiers would bring about significant benefits, in terms of increased efficiency, transparency and interoperability in the research data landscape. As a pioneer, the RGC has approved to adopt Open Research Contributor ID (ORCID) in its grants applications starting from the 2018/19 cycle, and the UGC has decided to formally adopt the ORCID as a mandatory requirement in the Research Assessment Exercise (RAE) 2020. In the long run, it is recommended to set up a central data registry to capture the updated research profile of each researcher, such as information on publications, projects conducted, grants records, etc., for the benefit of the funding bodies and researchers.

CHAPTER 1

INTRODUCTION

TASK FORCE ON REVIEW OF RESEARCH POLICY AND FUNDING

Background

1.1 The Government attaches great importance to supporting the research work conducted by the post-secondary education sector. To nurture the younger generation to meet evolving needs and enable them to pursue their respective talents, the CE pointed out during her question-and-answer session at the Legislative Council on 5 July 2017 that the Government would carry out in-depth reviews on eight key areas of education including "Strengthening funding support for research". At the invitation of the CE as announced in her Policy Address in October 2017, Professor Tsui Lap-chee convened a task force to review holistically the research support strategy, the level of research funding and the funding allocation mechanism for the higher education sector in Hong Kong. The goal of the review is to ensure quality and excellence of research undertaken by the higher education sector which can meet the needs of and be translated into competitive social and economic advantages for Hong Kong. To this end, the Task Force on Review of Research Policy and Funding was set up under the aegis of the UGC for the purpose.

1.2 According to the Policy Address announced in October 2017, the Government has set aside no less than $10 billion as additional funding for university research which is ready for disbursement upon the completion of the review and subject to the recommendations made by the Task Force.

1.3 The CE also announced in the Policy Address of October 2017 that the Government has set a goal to double the GDE on R&D as a percentage of the GDP, i.e. from 0.73% to 1.5%, by the end of the current Government's five-year term of office, i.e. 2022. Furthermore, to make R&D funding more sustainable, the Government would incentivise private companies to increase investment in technological R&D.

Membership

1.4 Professor Tsui Lap-chee was invited to chair the Task Force.

Composition of other members is as below:

(a) six members from the industry and / or academic community who are conversant with the local research environment and / or have rich experience in translational research;

(b) four ex-officio members including one each from the Education Bureau and the Innovation and Technology Commission (ITC) respectively, the Chairman of the RGC and the Secretary-General of the UGC; and

(c) the Chairman of the UGC as observer.

1.5 The full membership list of the Task Force is at **Annex A**.

Terms of Reference

1.6 The Task Force agreed on its Terms of Reference at its first meeting on 19 October 2017 as follows:

(a) to review the existing research support strategy and the level and allocation mechanism of research funding for the higher education sector, including but not limited to funding provided by the UGC and the RGC (such as the Innovation and Technology Fund (ITF) and the Health and Medical Research Fund (HMRF)), taking into account the progress and latest development of the Review of the Competitive Allocation Mechanism of the R-portion being conducted by the UGC, with options (but not limited) to:

(i) ensure the quality and excellence of research undertaken by the sector;

(ii) ensure that the world class research undertaken by the sector can meet the needs of and can translate into social and economic advantages for Hong Kong;

(iii) allocate research funding in a more streamlined and transparent manner;

(iv) provide incentives to the sector to engage and collaborate with industry and other end-users; and

(v) encourage the sector to engage in research commercialisation and knowledge transfer with industry and the community;

(b) to consult stakeholders during the review and appoint external consultants to assist in the review as appropriate;

(c) to consider any other issues in relation to the research regime in the higher education sector in Hong Kong as advised by the Government; and

(d) having regard to the outcome of the review, to make recommendations to the Government through the UGC.

Review Approach

1.7 Since its set up in October 2017, the Task Force proceeded in full swing to review the existing funding allocation mechanism. To gain a better understanding on the prevailing research funding schemes such as the nature of funding, eligibility, assessment criteria, etc., the Task Force conducted a round of stocktaking on research funding schemes available in Hong Kong and collected some relevant information on the funding bodies in the Mainland and some selected overseas jurisdictions for reference. The Task Force had also determined a set of guiding principles for the review which will be elaborated in further details in Chapter 3.

1.8 To converge insights for the betterment of Hong Kong's development in research, the Task Force published an Interim Report for Consultation in order to gauge views from the various sectors on its observations and preliminary recommendations. The Interim Report was published for consultation on 6 June 2018 and the consultation period ended on 10 July 2018.

1.9 All the feedback and views collected during the consultation period were studied and duly considered by the Task Force for incorporation as appropriate in this final Review Report.

Meetings Held

1.10 The Task Force has met a total of six times between October 2017 and September 2018 before concluding the review and finalising this Review Report.

REPORT STRUCTURE

1.11 This Report sets out the Task Force's findings and, taking into consideration the feedback / comments / views collected from various stakeholders and sectors during the consultation period, the recommendations which aim to build a stronger foundation for the research work of the higher education sector, enable industry to flourish, and promote the development of innovation and technology in order to meet the needs of the development of Hong Kong in the long run.

1.12 Chapter 1 of the Report outlines the background to the review and the approach adopted. Chapter 2 provides an introduction of the latest R&D situation and prevailing research landscape in Hong Kong. Listed at Chapter 3 are the eight guiding principles agreed by the Task Force to serve as a reference base to facilitate the proceedings of the review and making recommendations.

1.13 Chapter 4 covers the stock-taking results on local research funding schemes and relevant information of funding bodies in the Mainland and some selected overseas jurisdictions. Also presented in this Chapter is a pen-picture of the local research system, which, together with the reference information from the international research arena, have led to the discussion of the issues identified in the existing local research system.

1.14 Detailed at Chapter 5 is the consultation exercise launched to collect feedback, comments and views from various stakeholders and sectors. The salient points made by the respondents in the consultation period have also been summarised and attached to this Report.

1.15 Chapter 6 sets out the Task Force's recommendations which are finalised taking into consideration the insights and views collected in the consultation exercise. A wrap up of the review is given at Chapter 7.

CHAPTER 2

RESEARCH LANDSCAPE OF HONG KONG

R&D ACTIVITIES IN HONG KONG

Overall Expenditure on R&D

2.1 In Hong Kong, the ratio of GDE on R&D to GDP was between 0.72% and 0.79% from 2011 to 2016 as indicated at **Annex B**. In 2016, the GDE on R&D of Hong Kong [i.e. total expenditure on in-house R&D activities performed locally in the business sector, higher education sector and government sector (including public technology support organisations)] amounted to HK$19,713 million. Expenditure on R&D activities performed in the business, higher education and government sectors constituted 43%, 52% and 5% respectively of total GDE on R&D in 2016[1].

2.2 While R&D activities performed in the government sector (mainly public technology support organisations) represent a relatively small share of total GDE on R&D, it should be noted that the Government has been playing an instrumental role in facilitating R&D, technology upgrading and innovation through the provision of research facilities, infrastructure as well as funding support to business establishments and higher education institutions. Analysed by source of funds, R&D expenditure financed by the Government amounted to HK$9,298 million or 47% of the total GDE on R&D in 2016[1].

R&D Activities in the Business Sector

2.3 The local business establishments constitute an important R&D performing sector in Hong Kong. The total expenditure on in-house R&D activities in the business sector amounted to HK$8,528 million in 2016. The ratio of business R&D expenditure to GDP was 0.34% in 2016[1].

2.4 In-house R&D expenditure in the business sector was for research relating to business. Of the total in-house R&D expenditure incurred in 2016, the largest share was spent on experimental development (78%), followed by applied research (22%) and basic research (0.4%)[1].

[1] Source: "Hong Kong Innovation Activities Statistics 2016", Census & Statistics Department

2.5 Around 94% of the total expenditure on in-house R&D activities in the business sector was supported by local source of funds. Most in-house R&D expenditure (87%) was financed by the performing business establishments themselves, followed by business establishments' affiliates or parent company (both in and outside Hong Kong) within the establishments' own enterprise group (10%). Around 1% of the total expenditure on in-house R&D activities in the business sector was funded by the Government[1].

2.6 Apart from the information on expenditure on in-house R&D activities, statistics pertaining to expenditure on R&D activities contracted out to other organisations are also useful in providing a more comprehensive analysis on businesses' total investment in R&D activities.

2.7 In 2016, a total of HK$3,067 million was spent on contracted-out R&D activities in the business sector. Business expenditure on R&D contracted out to parties outside Hong Kong amounted to HK$1,865 million (61% of the total expenditure on contracted-out R&D), with the performing parties concerned mainly located in places outside Hong Kong, Mainland China and Macao. On the other hand, expenditure on R&D contracted out to local parties amounted to HK$1,203 million (39%)[1].

2.8 Analysed by type of performing party, contracted-out R&D projects were mainly undertaken by affiliates or parent company of the enterprise group which accounted for 44% of the total expenditure on contracted-out R&D activities. It was followed by companies not affiliated with the enterprise group concerned (38%) and public technology support organisations (11%)[1].

2.9 Analysed by source of funds for contracted-out R&D activities, 68% of the funds came from the establishments themselves. It was followed by affiliates or parent company of the enterprise group and the Government (e.g. ITF) (2%)[1].

2.10 Some 16% (622) of the business establishments which undertook R&D activities (including both in-house R&D and/or contracted-out R&D activities) in 2016 reported that they had collaboration arrangements on R&D activities with other parties. Analysed by type of collaboration partner, 56% of these 622 establishments had collaboration arrangements with company not affiliated with the enterprise group, and 28% had collaboration arrangements with higher education institutions[1].

R&D Activities in the Government Sector

2.11 Instead of being a major performer of R&D, the Government is playing a facilitating role in driving the economy's technology and innovation upgrading, through provision of funding support and technological infrastructure.

2.12 Expenditure on R&D activities performed by the Government amounted to HK$914 million in 2016. This was equivalent to a ratio of 0.04% to GDP in 2016[1].

2.13 Analysed by type of R&D expenditure, the proportions of recurrent expenditure and capital expenditure in the Government sector were 93% and 7% of the total expenditure on R&D in this sector respectively[1].

R&D Activities in the Higher Education Sector

2.14 The R&D expenditure in the higher education sector amounted to HK$10,271 million in 2016. This represented a ratio of 0.41% to GDP in 2016[1].

2.15 Recurrent expenditure incurred in R&D activities in the higher education sector constituted a predominant share of 95% of total expenditure on R&D in this sector in 2016, while capital expenditure accounted for 5%[1].

RESEARCH EXCELLENCE OF THE HIGHER EDUCATION SECTOR IN HONG KONG

2.16 Hong Kong has eight publicly funded universities with financial support from the UGC, and 14 local SF degree-awarding institutions. Hong Kong performs well in international rankings of research, with four of the UGC-funded universities in the top 100 in the Quacquarelli Symonds (QS) University Ranking, and three in the top 50[2].

2.17 Development in science and technology is a key to technological breakthroughs. It also fuels economic growth and improves quality of life. The Government has made continued investments in supporting the whole

[2] Source: "QS World University Rankings 2019", Top Universities (https://www.topuniversities.com/university-rankings)

spectrum of research capabilities, from basic research for building the foundation for scientific excellence, to applied R&D and innovation activities with close interface with the daily lives of our citizens as well as the needs of the business community.

2.18 Basic research is principally undertaken by the UGC-funded universities. The aggregated research expenditure in the 2016/17 financial year reported by the universities amounted to HK$10,271 million. Of this amount, the grants from the UGC and the RGC, together with other financial support from the Government and Government-related organisations, constituted the bulk of research expenditure for the universities. Funding commitment from the Government has been on a rising trend since 2004/05. In 2016/17, about 83% of the total research expenditure of the universities came from the Government. Research expenditure of UGC-funded universities by source of funds from 2012/13 to 2016/17 is at **Annex C**.

ROLES OF THE UGC AND THE RGC

Background to the UGC

2.19 The UGC was established back in 1965 and has emerged to become an important pillar in Hong Kong's higher education sector. The UGC has neither statutory nor executive powers. It plays the role of independent professional advisor to the Government on the funding and development of the higher education sector.

2.20 UGC's main function is to allocate funding to its funded universities, and to offer impartial and respected expert advice to the Government on the strategic development and resource requirements of the higher education sector in Hong Kong. The UGC also provides the universities with developmental and academic advice, having regard to international standards and practice.

2.21 The UGC seeks to promote responsible understanding between the universities, the Government and the community at large. It mediates interests between universities and the Government. On the one hand, the UGC safeguards academic freedom and institutional autonomy of the universities, while on the other it ensures value for money for taxpayers. It has open channels to both the universities and the Government, since it offers advice to, and receives advice from, both.

2.22 In respect of capital works projects, the UGC advises both universities and the Government on campus development plans and proposals made by universities, with a view to supporting their academic and overall development.

2.23 In respect of research, the UGC carries out RAEs as part of its commitment to assessing the research performance of UGC-funded universities. The main objectives of RAE are to assess the research quality of UGC-funded universities to provide assurance of their research performance using international standards, identify excellent research across the spectrum of submissions made by universities in order to drive excellence and encourage world-class research, produce assessment outcomes to inform the distribution of part of the R-Portion of the UGC Block Grant in a publicly accountable manner, provide direction to develop / enhance the research funding schemes administered by the UGC / RGC, and provide accountability for public investment in research with evidence of the benefits of this investment.

2.24 The terms of reference of the UGC are at **Annex D**.

R-portion

2.25 Recurrent grants provided by the UGC to each UGC-funded university comprise a Block Grant and funds provided for specific purposes. The amount of Block Grant to universities is calculated based on three elements, including teaching (about 75%); research (about 23%); and professional activity (about 2%). The Research element, i.e. the R-portion, is disbursed to the universities as infrastructure funding to enable universities to provide both the staffing and facilities (e.g. accommodation and equipment) necessary to carry out research, and to fund a certain level of research. The disbursement in the form of Block Grant would allow universities to have autonomy in and responsibility of determining the best use of the resources vested with them.

2.26 The R-portion corresponds to 65% of the research funding for UGC-funded universities, and can be used to cover a variety of costs, including salaries, infrastructure such as buildings and equipment, and other overhead costs. The rest of the research funding comes from competitive grants managed by the RGC (10%), other government sources (8%) and private funding (17%).

2.27 At present, the funding of the R-portion is driven by two engines: the results of the RAE and the universities' success in obtaining peer-reviewed RGC Earmarked Research Grants (ERG). To promote research excellence, the

UGC has been gradually allocating the R-portion to its funded universities on a more competitive basis. It was originally intended that over a period of nine years (starting from 2012/13), about 50% of the R-portion[3] will be ultimately allocated through funding informed by the result of RGC ERG (i.e. the competitive allocation mechanism). The remainder is allocated with regard to the universities' performance in the RAE. The R-portion provision for the 2016-19 triennium is about $4.3 billion per annum.

UGC's Latest Decision of "Freezing" the Percentage of the Competitive Part of the R-portion

2.28 The UGC concluded the RGC Review (Phase I) in May 2017. The findings and recommendations of the RGC Review (Phase I) were published in September 2017. In relation to the competitive allocation mechanism of the R-portion, there was feedback from the focus group participants and survey respondents that the mechanism had unintentionally amplified some institutional behaviours. For instance, some respondents felt that the use of the General Research Fund[4] (GRF) grants in the calculation of the Block Grant has led to the GRF awards being used widely as a university metric in promotion and tenure decisions at an individual level, thus causing increased pressure on staff to apply for RGC grants.

2.29 The Task Force of the RGC Review (Phase I) (TFRGC(I)) noted that the previous R-portion Review in September 2015 indicated that the mechanism had achieved its intended objectives. While the TFRGC(I) recognised the effectiveness in incentivising more productive and competitive researches with the coupling of the RGC grant success to the calculation of the R-portion, the TFRGC(I) also considered it important to take heed of the unintentional consequences of the competitive allocation mechanism of the R-portion. The TFRGC(I) recommended, amongst others, that the *"UGC and RGC should consider whether, in the light of stakeholders' feedback, the 2015 review of the aims, objectives and consequences of the coupling of the value of the R-portion to Higher Education Institutions and success in RGC grants should be revisited so that both the long and short term consequences of this*

[3] The percentages of the R-portion informed by the RGC ERG from 2012/13 to 2020/21 are originally intended as follows – 2012/13: 5%
2013/14: 10%
2014/15: 15%
2015/16: 20.5%
2016/17: 26%
2017/18: 31.5%
2018/19: 37.7%
2019/20: 43.8%
2020/21: 50%

[4] GRF, a popular individual research scheme under the RGC ERG, is one of the funding schemes that is taken into account in the competitive allocation of the R-portion.

continue to fit within the strategic aims of the funding". The UGC considered and accepted the TFRGC(I)'s recommendation in May 2017.

2.30 As a response to the stakeholders' concerns expressed in the RGC Review, and in the light of UGC's conclusion drawn earlier that the RAE 2014 was conducted in a fair, transparent and rigorous manner and that the results produced were robust and reliable for the purpose of recurrent funding assessment, the UGC approved in June 2017 to "freeze" the percentage of the competitive part of the R-portion for 2017/18 and subsequent years at the 2016/17 level, i.e. 26%, pending a further review of the competitive allocation mechanism of the R-portion. The remaining 74% of the R-portion will be allocated with regard to the universities' performance in the RAE 2014.

R-portion Review in 2015

2.31 Following up the agreement when the competitive allocation mechanism was introduced, the UGC conducted a comprehensive review on the competitive allocation mechanism of the R-portion in September 2015. The result of the review concluded that the prevailing funding methodology for the R-portion be driven by two engines was effective in achieving the intended objectives of the mechanism. The UGC agreed that the prevailing funding methodology would continue for the 2016-19 triennium.

2.32 As to whether the competitive allocation mechanism would continue beyond the 2016-19 triennium, the UGC considered that it should be subject to the development and changes in the research arena, with regard to whether the policy objectives which the current funding mechanism sought to address were still appropriate, and whether the mechanism was still fit for the purpose.

Further Review of the Competitive Allocation Mechanism of the R-portion

2.33 Pursuant to UGC's decision, a further review of the competitive allocation mechanism of the R-portion (the further R-portion Review) has been planned to begin in 2018/19. The UGC approved at its September 2017 meeting the proposed establishment of a "Working Group on the Review of the Competitive Allocation Mechanism of the Research Portion" (WGRP) to oversee the implementation of the further R-portion Review. According to the original plan, the further R-portion Review is to complete in 2018 and to inform the recommended funding arrangement for the 2019-22 triennium. In the light of the setting up of this Task Force in October 2017, the UGC's further R-portion Review is to take place after the completion of the Task Force's

review so that the advice of the Task Force can be taken into consideration.

Background to the RGC

2.34 The RGC was formally established on 1 January 1991 to replace the Research Sub-Committee of the UGC. The RGC's members comprise non-local academics, local academics and local lay persons. The RGC's Terms of Reference are at **Annex E**.

2.35 The RGC operates through subject panels and committees responsible for considering applications for research grants and fellowship applications.

2.36 When the RGC was established in 1991, it was responsible for HK$100 million of funding which was distributed through two schemes: the GRF, which covers individual research grants, and the CRF which in 1991 funded large pieces of equipment. Over time, the Government has also provided the RGC with additional funding, both to expand existing schemes and to deliver new schemes specifically initiated by the Government. The funding sources are summarised below:

REF

2.37 In February 2009, an HK$18 billion REF was established. The UGC is responsible for advising on the policies governing the operation, development and investment of the fund. From 2010/11 onwards, the investment income of at least HK$14 billion out of the total of HK$18 billion is used to replace the bulk of the recurrent subvention from the Government allocated to the RGC, thus providing greater funding stability and certainty of funding to support universities' research projects. In 2011/12, the Government secured the approval of the Legislative Council to inject HK$5 billion into the REF starting from 2012/13. Of that, the investment income of HK$3 billion is for funding researches of local SF degree-awarding institutions on a competitive basis to enhance academic and research development. The investment income of the remaining HK$2 billion replaces the recurrent provision of HK$100 million to the RGC to provide stable research funding for the UGC-funded universities. A further injection of HK$3 billion has been made into the REF to generate investment income, starting from 2018/19, to provide tuition waiver for local students admitted to UGC-funded research postgraduate programmes. Grants and schemes funded by the REF are:

(a) ERG

The investment income of HK$16 billion of the REF provides the source of funding to the ERG to support research projects and research activities. It is the main form of funding for academic research in the eight UGC-funded universities and is allocated on a competitive basis. The ERG complement the Block Grants from the UGC, part of which provide universities with funds for research infrastructure and outlays such as researchers' salaries, laboratory costs and other expenses (e.g. accommodation and equipment) related to UGC- or RGC-funded research.

(b) TRS

The income from up to HK$4 billion of the REF, is deployed to support the TRS involving themes of a more long-term nature and strategically beneficial to the development of Hong Kong. The Steering Committee on Research Themes and Topics was set up under the RGC to advise on the selection of research themes.

(c) Competitive Research Funding Schemes for Local SF Degree Sector

The investment income of HK$3 billion of the REF is designated to support the academic and research development of local SF degree sector on a competitive basis, through the Faculty Development Scheme, the Institutional Development Scheme and the Inter-Institutional Development Scheme.

(d) Tuition Waiver for Local Research Postgraduate Students

An injection of HK$3 billion into the REF was made in 2018. The investment income from the new injection is designated to provide non-means-tested tuition waiver for local research postgraduate students, with the view to incentivising local students to engage in research work in the higher education sector. The tuition waiver scheme has commenced from 2018/19.

UGC Funds

2.38 Research funding schemes supported by the UGC funds are:

(a) AoE

The AoE was launched by the UGC in 1998 to enable the UGC-funded universities to build upon their existing strengths and develop them into areas of excellence. The administration of the scheme was transferred to the RGC in February 2012, while the funding of around HK$100 million per annum continued to come from the UGC.

(b) Hong Kong PhD Fellowship Scheme

Established in 2009 by the RGC, the Hong Kong PhD Fellowship Scheme aims at attracting the best and brightest students in the world to pursue their PhD programmes in Hong Kong's UGC-funded universities. The Fellowship provides a monthly stipend of HK$20,000 (approximately US$2,600) and a conference and research-related travel allowance of HK$10,000 (approximately US$1,300) per year for the awardees for a period of three years. As approved by the UGC in May 2018, the number of research postgraduate places to be reserved for the Tenth Round of Hong Kong PhD Fellowship Scheme and subsequent exercises will be increased. As approved by the RGC in June 2018, starting from 2018/19, the monthly stipend and the related annual allowance will be adjusted from HK$20,000 and HK$10,000 to HK$25,100 and HK$12,600 respectively.

(c) Research Impact Fund (RIF)

To encourage more impactful research and foster more collaborative efforts with stakeholders beyond academia, the UGC approved in May 2017 the establishment of a new funding scheme, RIF, on a pilot basis. The scheme is administered by the RGC and the UGC is allocating $200 million for the first call of proposals within the 2016/17 - 2018/19 triennium.

2.39 Since its establishment, the total amount of funding allocated by the RGC to support research projects increased from HK$100 million in 1991/92 to

HK$1.2 billion in 2017/18. Over this time, the RGC has expanded from funding two schemes for academic staff in the UGC sector to funding 17 schemes, covering a range of schemes for academics and PhD students in the UGC sector, as well as three schemes for academics in the SF sector. More details on the RGC's funding schemes will be given in Chapter 4.

CHAPTER 3

GUIDING PRINCIPLES FOR RESEARCH

3.1 To facilitate the review, the Task Force has deliberated and agreed upon a set of guiding principles for adoption in the Task Force's discussion of the existing research support strategy and the level and allocation mechanism of research funding for the higher education sector in Hong Kong. The set of guiding principles, which reflect global best practices, has also been a reference base for the Task Force to make suggestions to further enhance the quality and excellence of research undertaken by the sector, and to promote research which can be translated into social and economic advantages for Hong Kong.

Guiding Principle I: High Quality Research with Social Impact

3.2 Research plays an important role in shaping the development of Hong Kong and the world. High quality research with social impact is crucial to ensure that resources are allocated to the best researchers to drive maximum impact to the society. The term "social impact" should be broadly defined to include both tangible and intangible benefits of research outcomes and the specialty of each discipline should be taken into account. Quality research should therefore pass threshold in both academic merit and potential research impact. In this connection, impact should be defined as the demonstrable contributions, beneficial effects, valuable changes or advantages that research qualitatively brings to the economy, society, culture, public policy or services, health, the environment or quality of life; and that are beyond the academia.

Guiding Principle II: Adequate Support for Funded Research

3.3 Adequate funding is critical to ensure the quality of research is competitive against world peers. The ratio of GDE on R&D to GDP in Hong Kong has been on the low side, ranging between 0.72% and 0.79% from 2011 to 2016. It does not compare well with that in the neighbouring and global peers as their respective ratio is between 1.7% to 4.2%. For Hong Kong to compete favourably in terms of R&D, new funding will be required to sustain the support for research with strategic impact and promote more competitive research of high quality.

3.4 The REF was established in 2009 to provide a certain and stable source of funding to support academic research. In recent years, there is concern that the investment income is insufficient to meet the budget of the research funding schemes administered by the RGC due to the relatively low investment return rate of the REF compared with the period when the fund was first established.

3.5 Adequate support for funded research in terms of size and duration of grants, as well as the associated on-costs / overheads is essential. There is therefore call for new injection of funding to meet the requirement. In addition to financial resources, support endeavoured to make the physical environment more favourable for promotion of academic exchange and collaboration should also be strengthened.

Guiding Principle III: Balance among Basic, Translational and Applied Research

3.6 Research process is a continuum and is difficult to separate into distinct units. However, for the purpose of research funding, it is customary to break down research into basic, translational and applied. Nonetheless, it is difficult to make generalisation about the ideal balance among basic, translational and applied research because it depends on the nature of different disciplines and particular research programmes. Specific knowledge and understanding of the research area under study is required to facilitate consideration of the appropriate balance among these different modes of research activity.

3.7 It is noted that Hong Kong has notable strengths in certain important areas of basic research which must be maintained. On the other hand, more support and facilitation will be required to engage local academic staff or researchers in academic-industry collaboration in order to foster translational development and knowledge transfer. Developing the holistic value connecting basic research to applied research through translational research is the key to achieve the balance and competitive edge in the international arena.

Guiding Principle IV: Funding for Both Large-scale Programmes and Individual Projects

3.8 To meet the increasing complexity and multi-dimensionality of many societal and global challenges, cross-institutional / cross-disciplinary collaboration to bring together researchers from across various disciplines, universities / institutes should be encouraged. Although funding is currently available for such research, joint projects of such nature are mostly on a small scale and time-limited.

Guiding Principle V: High Quality Peer Review

3.9 High quality peer review is the cornerstone to ensure quality of research. Effort should be taken to ensure that the quality of reviewers as well as the assessment process and procedures meet high standard. Selection of reviewers should take into account different types of research such as basic and applied that require experts of different background while assessments of multi-disciplinary and inter-disciplinary proposals will undoubtedly require a wider range of reviewer expertise.

Guiding Principle VI: Collaboration and Coordination among Research Funding Bodies

3.10 The Government is currently providing research funding to the higher education sector through a number of government research funding schemes administered by various funding bodies, including the Environmental Protection Department (EPD), Food and Health Bureau (FHB), ITC, Policy Innovation and Co-ordination Office (PICO) and RGC. There are also funding schemes provided by private entities such as the Croucher Foundation. As these funding schemes have different objectives, target participants, assessment criteria, funding period, etc., and are administered by the respective funding bodies independently, it is considered that collaboration, if appropriate, and coordination among different funding bodies should be strengthened and enhanced with a view to providing better steering and avoiding overlapping / wasting of resources, and to improve the research ecosystem in Hong Kong in the long run.

Guiding Principle VII: Sustainable Strategies and Support for Research Talent and Infrastructure

3.11 To nurture, retain and expand our pool of research talent would be of paramount importance in supporting the advancement of R&D and cultivating the research culture in Hong Kong. Promising academics should be provided with opportunities and incentives at their early / mid-career to develop their potential in full, encourage them to contribute and drive them to research excellence.

3.12 In supporting the government initiatives to promote innovation and technology via the formation of technology clusters or the establishment of independent research institutes jointly owned by universities, universities should be given flexibility to continue exercising autonomy in respect of their staffing arrangements or contractual issues.

Guiding Principle VIII: Diversified Funding Sources to Include Private, Industrial and Philanthropic Support

3.13 In Hong Kong, funding for R&D has all along been government-led and the share of business sector in R&D expenditure takes up less than 45% over the years. To enhance the impact of the funding for research and diversify the source of financial support, more non-government funding from the private sector and / or philanthropists should be attracted to support basic research in universities, in addition to encouraging applied research related to business or the market.

CHAPTER 4

FUNDING SCHEMES AVAILABLE IN HONG KONG AND OTHER JURISDICTIONS

4.1 To gain a better understanding on the prevailing research funding schemes such as the nature of funding, eligibility, assessment criteria, etc., the Task Force conducted a round of stocktaking on research funding schemes available in Hong Kong and collected some relevant information on selected funding bodies in the Mainland and some selected overseas jurisdictions for reference. The findings as per the stocktaking exercise conducted in November 2017 are summarised in the ensuing paragraphs.

RESEARCH FUNDING SCHEMES IN HONG KONG

4.2 At present, there are 28 government research funding schemes administered by various bodies: the RGC (17 schemes), ITC (six schemes), FHB (two schemes), EPD (one scheme) and PICO (two schemes).

Funding Schemes under the RGC

4.3 The RGC provides research funding to both the UGC-funded sector and the SF degree sector from the investment income of the $26 billion REF. RGC's budget for competitive research funding schemes in the 2017/18 academic year is around $1.2 billion.

4.4 The RGC administers 14 competitive research funding schemes for the UGC-funded sector in four categories, namely (a) Individual Research, (b) Collaborative Research, (c) Fellowship, and (d) Joint Research Schemes (JRS), and three competitive research funding schemes for the SF sector.

(a) Individual Research includes the GRF and Early Career Scheme (ECS). The two schemes provide funding to small-scale projects with project duration of two to three years. The funding allocated to each project is between $0.1 million and $1.62 million. The success rate of the two schemes is about 33% and 38% respectively. GRF is the most popular RGC funding scheme, attracting over

2 700 applications per year.

(b) Collaborative Research includes the CRF, TRS and AoE.

CRF provides funding to support medium-scale collaborative projects in the form of Group Research Grant and Equipment Grant. The funding allocated to each project is between $2 million and $10 million for a period of three to five years. The success rate is about 10%. CRF encourages collaborative research across disciplines and / or universities and acquisition of major research facilities / equipment for collaborative research.

TRS focuses on universities' academic research efforts on themes of strategic importance which are approved by the Government for the long-term development of Hong Kong. TRS provides funding between $13 million to $75 million per project to support large-scale collaborative research projects for a period of up to five years. A total of 40 projects were funded in the past eight rounds of exercise with a total funding allocation of over $1,624 million. The success rate is about 10%.

Unlike other funding schemes of the RGC, the funding of AoE comes from the UGC to support the UGC-funded universities to build upon their existing strengths and develop them into areas of excellence. AoE funding exercise is generally held biennially. 21 projects were funded in the past seven rounds of exercise with a total funding allocation of over $1,317 million. The success rate is about 8%.

(c) Apart from the research funding schemes mentioned above, the RGC runs two fellowship schemes which aim to recognise outstanding humanities and social sciences academics and attract the best students globally to pursue PhD studies in Hong Kong.

(d) The RGC also has seven JRS with funding bodies of other jurisdictions operating in the mode of project grants, travel / conference grants or fellowship.

(e) The three funding schemes for the SF sector aim to develop the research capacity of both the SF institutions and their faculty members.

4.5 To encourage more impactful research and foster more collaborative efforts with stakeholders beyond academia, the UGC approved the establishment of a new funding scheme, RIF, in May 2017 on a pilot basis. The scheme is administered by the RGC and the UGC is allocating $200 million for the first call of proposals which was issued on 31 January 2018 and closed on 9 March 2018. Subject to approval by the UGC, a second round of the scheme will be launched.

Co-ordination with Other Funding Bodies

4.6 To enhance the co-ordination between the RGC and ITC, a representative of ITC is appointed as an ex-officio member of the RGC. To forge a closer link between the funding programmes between the two funding bodies, applicants of the RGC collaborative funding schemes are requested to provide an optional technology transfer plan in their funding applications for ITC's advance information. Once these applications are approved by the RGC, the ITC will be invited to keep in view of these projects and their progress. For projects with potential to proceed to the applied R&D phase, the project teams will be encouraged to apply for the ITF so that these projects could receive further funding support from the ITF. Agreement has been reached between the RGC and the ITC to extend the optional technology transfer plan arrangement to projects with high technology transfer potential from individual funding schemes (i.e. GRF and ECS) starting from the 2018/19 exercise with a view to enhancing a closer link between the two units.

Funding Schemes under ITC

4.7 The ITF, administered by the ITC, provides financial support for applied research as well as R&D activities. An appropriation of $5 billion was approved to the Fund at its start. The ITF administers six funding schemes which support R&D and nurture technology talent.

4.8 The Innovation and Technology Support Programme (ITSP) (platform projects) supports midstream / downstream R&D projects undertaken by local universities, SF degree-awarding institutions, R&D Centres and designated local public research institutions. There are two streams under ITSP (platform projects), one for Platform / Tier 3[5] projects for local universities and SF degree-awarding institutions, and the other for Platform / Seed / Tier 3[5]

[5] Seed / Tier 3 projects are more forward-looking and exploratory projects that aim to provide foundation work for future platform / collaborative projects.

projects for R&D Centres and designated local public research institutions[6]. For projects funded under ITSP (platform projects), the project period could be up to 24 months. Platform projects require industry sponsorship of at least 10% of the total project cost. Seed / Tier 3 projects do not require industry sponsorship. For the first stream, 111 applications were approved in 2016/17 with a total funding of $240.5 million. The success rate is about 18%. The range of funding per project is from $0.2 million to $9.3 million. For the second stream, 83 applications were approved in 2016/17 with a total funding of $353.5 million. The range of funding per project is from $0.2 million to $12 million. The success rate is about 67%.

4.9 The University-Industry Collaboration Programme (UICP) and ITSP (collaborative projects), which will be subsumed under the new Partnership Research Programme in 2019, aim to stimulate private sector interest in R&D through leveraging the knowledge and resources of the public sector, and to support collaborative projects undertaken by private companies in collaboration with local universities, SF degree-awarding institutions, R&D Centres, or designated local public research institutions in the form of matching grant. The private company has to contribute at least 50% of the project cost. 89 applications were approved in 2016/17 with a total funding of $140.1 million. The success rate is about 80%. The funding allocated to each project is between $0.2 million and $3.9 million for a period of up to three years.

4.10 The R&D Cash Rebate Scheme (CRS) aims to reinforce the research culture among private companies and encourage them to establish stronger partnership with designated local public research institutions by providing 40% cash rebate of their contribution to ITF and partnership projects. A total funding of $72.4 million was provided to 285 approved applications in 2016/17. The range of funding was from $4,000 to $3 million. The success rate is 100%.

4.11 The Enterprise Support Scheme (ESS) aims to bring impetus to encourage more private sector investment in R&D activities. Limited companies registered in Hong Kong, regardless of their size, are eligible to apply. The funding ceiling for each approved project is $10 million and funding will be provided on a dollar-for-dollar matching basis. The maximum project period generally does not exceed 24 months. A total funding of $38.6 million for 15 applications was approved in 2016/17 with a success rate of 22%. The range of funding is from $0.2 million to $7.6 million.

4.12 The Midstream Research Programme for Universities (MRP) was

[6] There are five R&D Centres and four designated local public institutions.

launched in December 2016. It encourages universities to collaborate with leading research institutions worldwide to conduct more inter-disciplinary and multi-institutional translational R&D work in focused technology areas, such that more research outcomes could be made available for further downstream research work or product development. The funding ceiling of the MRP is $5 million but may be up to $10 million per project if it involves collaboration across multiple disciplines, universities or research institutions. The maximum project period is 36 months. Applications are invited every year. The first round of application ended in March 2017. Eight projects with seven of them involving collaboration across disciplines or institutions were supported with a total funding of about $34 million. The 2018 MRP application exercise commenced on 28 February 2018 and closed by 30 April 2018.

4.13 The Internship Programme (IP), together with the new scheme "Postdoctoral Hub" launched in August 2018, aim to provide funding for nurturing new talent in R&D. The IP supports university graduates to pursue a career in innovation and technology and it provided a total funding of $99.9 million for 389 awardees in 2016/17 with a success rate of 86%.

Funding Schemes under FHB

4.14 The HMRF aims to build research capacity and to encourage, facilitate and support health and medical research to inform health policies, improve public health, strengthen the health system, enhance healthcare practices, advance standard and quality of care, and promote clinical excellence, through the generation and application of evidence-based scientific knowledge in health and medicine. It also provides funding support to evidence-based health promotion projects. Research funding is provided through (i) Investigator-initiated Research Projects; (ii) Health Care and Promotion Scheme; (iii) Research Fellowship Scheme and (iv) Commissioned Research Programmes / Studies or Health Promotion Programmes / Projects. The normal funding duration is two years. About 150 to 260 projects were funded from 2014/15 to 2016/17 with a total funding between $145 million and $304 million. The size of funding per project is between $41,000 and $31.5 million. The success rate of (i) is between 16.5% and 28.1%. For (iii), the first open call was issued in August 2015, and the applications of the said round were approved in 2016/17 with a success rate of 50%.

4.15 The Acquired Immune Deficiency Syndrome (AIDS) Trust Fund provides assistance to human immunodeficiency virus infection (HIV)-infected

haemophiliacs and generally to strengthen medical and support services, public education, and research on AIDS. In 2015/16, four projects with a total funding of $3.9 million were approved. The maximum project period is three years. The range of funding per project is from $0.41 million to $2.6 million. The success rate is 44%.

Funding Scheme under EPD

4.16 The Environmental Research, Technology Demonstration and Conference (RTDC) Projects funding scheme of the Environment & Conservation Fund (ECF) provides funding support for environmental research, technology demonstration and conference projects initiated by non-profit-making organisations. The projects should be applied research in nature. For technological demonstration projects in particular, the benefits must accrue to one or more industries, and not just individual companies. Successful projects should be publicised so as to disseminate the results and to ensure widespread adoption of the technologies by relevant sectors. 24 projects were funded in 2016/17 with a total funding of $28.9 million. The size of funding per project is between $0.247 million and $4.2 million and the maximum project period is three years. The success rate is 21%.

Funding Schemes under PICO

4.17 There are two funding schemes under the PICO, namely the Public Policy Research Funding Scheme (PPR) and the Strategic Public Policy Research Funding Scheme (SPPR). PPR provides funding to promote public policy research and develop the human resources required. Applications are accepted all year round and about 30 projects with an approximate funding of $17 million were approved per year in 2015/16 and 2016/17. The size of funding per project is between $0.195 million and $1.63 million and the normal project duration is between six and twelve months. The success rate is between 35% and 39%. The objective of SPPR is to facilitate longer-term public policy research on specific areas with a project duration ranging from three to five years. Three projects with a total funding of $9.8 million were approved in 2016/17 and the funding size per project is between $3 million and $3.4 million. The success rate is 7%. The PICO organises forums and seminars for researchers to present their research findings with stakeholders.

Cross-boundary Remittance of Research Funding

4.18 Recently, the Central Government announced in May 2018 the new policy to open up science and technology funding by the Ministry of Science and Technology and the Ministry of Finance for application by the higher education institutions and research institutions in Hong Kong. This new initiative allowing cross-boundary remittance of approved project funding from the Mainland to Hong Kong is considered an opportune source of research support. Such a breakthrough should greatly benefit R&D in Hong Kong and help bring a new impetus to the research sector, and support Hong Kong to become an international innovation and technology hub. Moreover, local universities and institutions may further foster their collaboration with the Mainland on the research front.

4.19 With the breakthrough of the cross-boundary funding, Hong Kong research sector may then build better alliance with Mainland universities and further leverage Mainland resources. Meanwhile, the UGC is considering new measures to support joint laboratories as well as additional initiatives to foster collaboration between the Mainland and Hong Kong.

Funding from non-Governmental Sector

4.20 The Croucher Foundation is one of the private foundations established in Hong Kong dedicated to promoting the standard of natural sciences, technology and medicine in Hong Kong. It supports the career development of promising early career and mid-career scientists and facilitates the exchange of ideas among scientists in Hong Kong, Mainland and overseas. In the past three years, around 60 projects were awarded per year with a funding between $65 million and $81 million. The size of funding per project is between $0.1 million and $5 million. The success rate is between 15% and 18%. The project duration is usually shorter than six years.

RESEARCH FUNDING SCHEMES IN OTHER JURISDICTIONS

4.21 Apart from the information related to the research funding in Hong Kong, the Task Force has also collected and studied some information on research funding in the Mainland and other jurisdictions, including Australia, Canada, Singapore, the European Union (EU), the United Kingdom (UK) and the United States of America (USA). Information gathered on those overseas jurisdictions is summarised at **Annex F**.

NATURE OF RESEARCH FUNDING SCHEMES

4.22 It is noted that the nature of the research funding schemes / programmes provided under the funding bodies of the jurisdictions as set out at **Annex F** can be broadly classified into the following categories:

(a) Basic / Applied research

Basic research aims to create knowledge and provide support to researchers for new research ideas while applied research is goal directed and seeks to acquire and apply knowledge for practical application. Such nature of research is commonly found in all funding bodies.

(b) Transformative (midstream) research

To support the translation of research outcomes into useful products. Examples such as the "Central Gap Fund" under the NRF of Singapore and the "Transformative Research Technologies Funding" provided by the BBSRC with two other RCs in the UK.

(c) Collaborative research

(i) collaboration between universities / research institutes and industries, e.g. "Industry Alignment Fund (IAF) Pre-Positioning Programmes" in Singapore and "Proximity to Discovery : Industry Engagement Fund" of RCs in the UK;

(ii) collaborative research across disciplines, e.g. Transformative Research Technologies Funding in the UK;

(iii) collaboration between local and overseas universities, e.g. Joint Research Schemes of A*STAR (Singapore), "Climate Change and Atmospheric Research" from NSERC (Canada) and "Linkage Programmes" from ARC (Australia); and

(iv) collaborative research across countries / nations to support international and inter-disciplinary collaborations in research, such as the "Collaborative Grants" from NHMRC (Australia), "Collaborative and Thematic Resources in Mathematics and Statistics Programme" under the NSERC (Canada) and

"Newton Fund" under the RCs in the UK.

(d) Partnership programme / research between researchers and policy makers / private sector

These programmes aim to provide support to partnership between researchers and organisations from the public or private sector. Examples such as "Partnership Grants" from SSHRC of Canada, "Knowledge Transfer Partnerships" under the ESRC of the UK, "Industry Collaboration Projects (IAF-ICP)" under the A*STAR of Singapore and the "Partnership Projects" from NHMRC of Australia.

(e) Target-based research

The focus of research is chosen by the funding bodies according to the jurisdiction's research priorities, e.g. "NHMRC - EU Collaborative Research Grants" and "NHMRC and NIH BRAIN Initiative Collaborative Research Grants" under the NHMRC of Australia.

(f) Equipment / Infrastructure grants

Such grants aim to support the procurement of equipment or infrastructure, e.g. the "Research Tools and Instruments Grants" from the NSERC of Canada and "Equipment Grants" from NHMRC of Australia.

(g) Fellowship programmes

These programmes aim to nurture researchers, e.g. "Australian Laureate Fellowships" under the ARC of Australia, "NRF Fellowship" from the NRF of Singapore, "Fellowships for Young International Scientists" under the Chinese Academy of Sciences.

RECENT TREND OF DEVELOPMENT IN OVERSEAS RESEARCH FUNDING BODIES

Higher Level Strategies

4.23 It is noted that some jurisdictions are transforming to a research ecosystem that comprises various ministries or research funding bodies / R&D

performers but headed by a centralised strategic council or advisory board to steer and formulate strategic plan in respect of the research policy and funding. For instance, in Singapore, the RIEC, supported by the NRF Board, oversees the long-term strategy in research policy for the nation. The UKRI, newly formed in April 2018, brings together the seven RCs, Innovate UK and a new organisation, Research England, headed by the UKRI Board, and operates across the whole of the UK with a combined budget. The UKRI Board plays a critical role in providing strategic direction and oversight, promoting the importance of UK science and innovation with a view to strengthening the UK's strategic approach to future challenges and providing a strong and unified voice for the UK's research and innovation community on the global stage.

4.24 The formation of the UKRI is brought about by a review of the research policy and funding in the UK, namely "A Review of the UK Research Councils" by Sir Paul Nurse (Nurse Review) in 2015. The review was requested by Ministers of the UK Government following publication of the UK Government's Science and Innovation Strategy. The Nurse Review indicated that to maintain research strength across the board and promote high quality research with responsiveness to new developments and needs, the RCs should build on pre-existing research strengths and provide the leadership to support both the overall vigour and connectivity of the UK research base and to link knowledge with innovation and benefits for society. To support a high-level strategic discussion including analysis of strengths, weaknesses and gaps in UK research portfolio, the RCs should take ownership of mapping the UK research landscape to produce a consolidated picture of capability across RCs, Innovate UK, Government departments, local authorities, other public agencies and industries and how to access research funding support, including making these data widely available. Against this background, the UKRI was proposed to be set up for formulating overall research strategy for the UK.

4.25 Similar to the UK, Canada conducted a review of the federal system of support for research and funding arrangements in 2016. The review concluded that Canada's federal research ecosystem was weakly coordinated and inconsistently evaluated. It further recommended the formation of a new National Advisory Council on Research and Innovation (NACRI) to provide broad oversight of the federal research and innovation ecosystems, and to review the current allocation of funding across the granting councils.

Enhancement on Applied Research & Engagement of Commercial Sector

4.26 Among the overseas jurisdictions examined, there seems to be a

trend to put increasing weight on research with commercialisation potential or business-focused research collaboration programmes. For example, after a review on research policy and funding arrangements in 2015, the two major funding bodies in Australia, ARC and the NHMRC, allow increasing recognition of industry experience alongside research excellence, and encourage collaboration between researchers and the industry. The ARC actualised the above initiatives in its funding programmes by agreeing to establish expert panels to assess the elements of ARC grant proposals that relate specifically to commercialisation potential and collaboration with businesses and other end-users for funding exercises from mid-2016 onwards. The ARC also announced in October 2017 to allocate AUS $4.3 million (~HK$26.01 million) to support ten new collaborative research projects under the Linkage Projects Scheme. 18 partner organisations, in addition to the ARC funding, would provide a further AUS $7.1 million (~HK$42.96 million) in cash and in-kind over the duration of the projects, fostering a stronger industry-research link.

4.27 For the case in the UK, one of the commitments of the UKRI is to translate research into better business outcomes effectively and identify the commercial potential in new technologies. As indicated in the Nurse Review, the inclusion of the Innovate UK, the UK's innovation agency which aimed to fund, support and connect innovative business to accelerate sustainable economic growth, into the UKRI was to help promote and catalyse interactions between the academic and business communities.

Summary of Observations

4.28 From the experience of other jurisdictions, collaboration and research impact are the main focuses in the latest trends of research development. In some jurisdictions, a centralised strategic council or advisory board is formed to steer and formulate strategic plan in respect of the research policy and funding and to facilitate communication amongst the funding bodies.

4.29 The funding bodies of other jurisdictions provide a wide range of funding to support both basic and applied research and to meet the needs of researchers at different stages of their careers. In the past, researchers heavily relied on government funding to carry out research. At present, researchers tend to seek more funding from the industry / private foundations. Through various collaborative funding schemes, the funding bodies encourage researchers to engage partnership with the industry / community organisations, increasing industry's participation and support to research. As a result, funding bodies have become more focused on the academic, societal and economic benefits of

the research outcomes.

4.30 There is increasing emphasis on collaborative research as evident in various modes of cross-institutional and cross-disciplinary collaboration being put in place overseas to bring together resources and knowledge across different fields, technologies and disciplines. One of the representing examples is the Broad Institute of Massachusetts Institute of Technology and Harvard (BI).

R&D DIRECTION FOR HONG KONG

4.31 Positioned as a knowledge-based economy, Hong Kong has to maintain, and expand as appropriate, a critical mass of researchers who propel relentlessly the frontier of knowledge in various disciplines spanning from science to arts, and crossing the spectrum from technology to social sciences and humanities.

4.32 Hong Kong has made great strides in academic excellence over the past decade. As a way forward, consideration should be given to tap on the advancement of knowledge beyond the academia. Industries should be incentivised to join hands with academics and researchers for more engagement in academic-industry collaboration, with an objective to translate academic output into impact on the economy and society, and in the form of product innovations and commercialisation. Developing the holistic value connecting basic research to applied research through translational research is the key to achieve the balance and competitive edge in the ever-evolving international arena.

4.33 High quality research with social impact is crucial to the future development of Hong Kong. The term “social impact” should include both tangible and intangible benefits of research outcomes and the specialty of each discipline should be taken into account. Quality research should therefore pass the threshold in both academic merit and potential research impact with demonstrable contributions to be brought to the economy or culture that are beyond the academia.

CHAPTER 5

PUBLIC CONSULTATION AND RESULTS

Interim Report for Consultation

5.1 Having studied the prevailing situation in Hong Kong and making reference to the experience of the Mainland and overseas jurisdictions, the Task Force has explored ways to allocate research funding in a more streamlined and transparent manner; means to incentivise the sector to engage and collaborate with industry and other end-users; as well as proposals to encourage the higher education sector to engage in research commencialisation and knowledge transfer with industry and the community.

5.2 To solicit feedback from the research stakeholders and relevant sectors, the Task Force launched a series of consultation activities to invite views from the sectors on its findings and preliminary recommendations. Following the endorsement of the UGC, the Task Force published its Interim Report for Consultation on 6 June 2018 and the consultation exercise commenced thereafter.

Consultation Exercise

5.3 The consultation was open to the public and the process commenced on 6 June 2018 with the uploading of the Interim Report onto UGC's web portal for ease of public access. Together with the issuing of a press release to announce the commencement of the consultation exercise, a media briefing was also conducted on the same date.

5.4 In addition to an open letter posted on UGC's web site, invitations were sent to all Heads of UGC-funded universities / SF degree-awarding institutions and RGC / RGC committee / RGC panel members to appeal for their participation in the consultation exercise. For a focused discussion on the subject, presentation of the Interim Report was made to the Heads of UGC-funded universities, Heads of SF degree-awarding institutions, and the RGC respectively in June 2018. To collect direct feedback from the higher education sector, a symposium was conducted on 22 June 2018 to facilitate an

exchange of views with the administrators, academics as well as researchers of UGC-funded universities and SF degree-awarding institutions. The symposium participants actively shared their thoughts and suggestions. Their dialogues with the Chairman of the Task Force on the occasion were fruitful, allowing the panel to clarify details of the recommendations and collect useful ideas and views. The consultation exercise ended on 10 July 2018.

Results of Consultation

5.5 In addition to the verbal feedback collected in the consultation activities, a total of 30 written responses were received from individuals, industry sector, universities / institutions, unions and other concern groups. Also, representatives of Scholars' Alliance for Academic Freedom and Progressive Scholars Group arranged a special visit to the UGC Secretariat and presented their views in person.

5.6 As a general overview, all the preliminary recommendations received substantial support from the stakeholders including the Heads of UGC-funded universities, Heads of SF degree-awarding institutions and the RGC. Aside from indicating their support to the proposals, some respondents have appealed for more attention to concerns in their sector (e.g. SF degree-awarding institutions requesting that their funding should not be reduced in the course of the rationalisation of different pots of the REF), and / or issues they believe should be addressed in taking forward the recommendations (e.g. the possibility of data privacy restriction or legal implication in setting up a central database on researchers). Suggestions have also been received on issues to be included in the RGC Review (Phase II) and UGC R-portion Review.

5.7 In addition to expressing views on research policy and funding, some concern groups have taken the opportunity to put forth their views that they are not too certain about the benefits to be incurred from the projected expansion of research capacity of the sector with new research funding. For instance, some academics with Humanities and Social Sciences backgrounds have called for more attention and resources from the research funding agencies.

5.8 The consultation has also drawn the attention of unions and other associations with interests on higher education development. They expressed concerns on competition for research resources, and unstable employment conditions / limited career prospect and opportunities for junior / aspiring

academics, especially those with temporary / part-time contracts given the current research ecosystem.

5.9 All views, feedback and comments received have been studied and considered for incorporation as appropriate in this Review Report for submission to the Government upon endorsement by the UGC in September 2018. For easy reference, the key points made by the respondents, together with the Task Force's suggested response / actions / remarks, are consolidated in **Annex G**.

5.10 As the preliminary recommendations as per the Interim Report have been substantially supported, they will be presented as they are to the Government while more details on the recommendations will be given in this Report.

CHAPTER 6

RECOMMENDATIONS

6.1 The final recommendations incorporating the feedback received from stakeholders and research sectors are summarised in the ensuing paragraphs.

SUBSTANTIAL INCREASE IN RESEARCH FUNDING

Doubling Funding for Competitive Research

6.2 In Hong Kong, the ratio of GDE on R&D to GDP was between 0.72% and 0.79% from 2011 to 2016. This ratio is much lower than that in a number of jurisdictions such as Mainland China, Singapore, South Korea, the UK and the USA as their respective ratio is between 1.7% to 4.2%. To this end, the CE announced in her Policy Address in October 2017 that the Government had set a goal to double the ratio from 0.73% to 1.5% by the end of the current Government's five-year term of office. This goal should be achieved with the concerted effort of all Government and private entities, including the business sector, higher education sector and Government sector. Considering that it would also take time for the community to expand its research capacity, the allocation of new resources should be made available by phases.

6.3 While the element of competitiveness in allocating research funding helps promote research excellence in the sector, it is noted with concern that the expenditure on competitive R&D in Hong Kong constitutes only 0.07%[7] of GDP, while that in the UK, Canada and the USA is in the range of 0.15% to 0.24% of respective GDP. On the back of CE's pledge to double the ratio of GDE on R&D to GDP from 0.73% to 1.5% by 2022, the overall funding for competitive research should also be proportionately doubled from the prevailing $2 billion to $4 billion per annum by then. The proposed doubled funding will undoubtedly strengthen the innovative and research capability of Hong Kong and overcome the gap with neighbouring regions in terms of funding availability for research.

[7] For competitive research funding only.

6.4 At present, the RGC administers a total of 17 competitive research funding schemes, 14 of which are for the UGC-funded sector whilst three are for the SF degree sector. The RGC's budget for competitive research funding schemes in the 2017/18 academic year is around $1.2 billion. In consideration that universities could conduct more impactful and translational research projects in meeting Hong Kong's needs, the RGC launched in 2018 a new competitive funding scheme, namely the RIF, on a pilot basis to strengthen midstream research programmes for universities. The funding requirements will be met initially from the UGC's Central Allocation Vote. New funding will be required for the RGC to sustain the support for research with strategic impact and to promote more competitive research of high quality. For the overall funding for competitive research to be doubled in four years, it is therefore reasonable to assume that additional funding from the Government would be forthcoming to double the annual research funding of RGC from around $1 billion to $2 billion over the same period.

Recommendation 1

The Government to provide new funding to support R&D with a view to doubling the overall competitive research funding in Hong Kong from the prevailing amount of about $2 billion to $4 billion per annum by 2022, including the doubling of RGC funding from $1 billion to $2 billion over the same period.

Ensuring Sustainability of Research Funding

6.5 Sustainability of research funding is important to attract and retain talents for the long-term planning of human resources and the development of the research ecosystem of Hong Kong. The Government should show strong commitment to the sustainability of funding by offering appropriate long-term funding strategies. Strategies for endowment research funding need to be credible and viable to meet the annual disbursement needs with spending that is affordable and acceptable to the public, taking into account the economic environment of the times.

6.6 The REF was established in 2009 with a capital of $18 billion to provide a source of stable funding to support academic research. The REF was topped up by $5 billion in 2012. As mentioned above, the RGC administers a total of 17 competitive research funding schemes and the funding source for 15 schemes is from the interest return of REF, while two are supported by UGC

funds. Although there is an increasing demand for the funding support from the REF, the allocation to the ERG under the REF could not address the additional demand and cover inflation but maintained at some $800 million per year since 2014/15 due to budget constraint. The annual investment return rate of the REF has been declining from 6.8% in 2009 to 2.8% in 2017[8]. Though the return rate is expected to rise to 4.6% in 2018, this is to a large extent due to a one-time stock market performance in 2017. The decline of the annual return of the REF in average over the past years remains a concern for the UGC as it is expected that the projected investment income (the medium-term return rate is 4%) of the REF in the years to come would not be sufficient to cover the schemes under the ERG on a sustainable basis.

6.7 As a consequence of the decline in the investment return, the REF suffered a deficit of about $370 million in 2016/17. There are views that the dwindling of the investment return rate of the REF and the recent capping of the RGC GRF at a maximum of $1.2 million[9] limit the opportunity and extent of achievement of active researchers in Hong Kong. Taking into consideration inflation and salary hikes, the current research environment is more challenging than a decade ago. While there is an option that the funding provided by the RGC need not be confined to the investment return of the REF and part of the principal can be drawn as appropriate, it is necessary for the REF to be topped up with an injection of new capital such that the annual return can be restored to a level sufficient to meet the requirements in the long-run.

6.8 To address the concern on the decline in the investment return of the REF and the funding requirement for competitive research, provision of new resources from the Government is required. New funding resources in the form of an injection to the REF will indeed provide a more stable source of funding and should hence be welcomed by the higher education sector. As announced by the CE in her Policy Address in October 2017, the Government had set aside no less than $10 billion as additional funding for university research which would be disbursed upon completion of the review and subject to the recommendations made by the Task Force. The research community is of the general view that this additional resources commitment should be

[8] Investment return rate of the REF over the past 10 years is as follows:

2009: 6.8%
2010: 6.3%
2011: 6.0%
2012: 5.6%
2013: 5.0%
2014: 3.6%
2015: 5.5%
2016: 3.3%
2017: 2.8%
2018: 4.6% (expected)

[9] This is a "soft" cap as projects may go beyond $1.2 million if there are strong justifications.

differentiated from the cross-boundary remittance of national research funding as the former should be targeted solely for the higher education sector. To this end, it has been anticipated that the Government would inject no less than $10 billion to the REF so that the annual return can be restored to a level sufficient to meet the requirements in the long-run. Additional research funding mechanisms or strategies may need to be introduced in a timely and strategic manner to ensure that adequate resources are provided to support the initiatives as proposed in the following sections of this report.

Recommendation 1a

To inject substantial new money into the REF to make up the shortfall due to the reduction in the annual rate of return, in order to sustain the current funding for research.

More Flexible and Effective Deployment of Funding Resources

6.9 The REF is currently divided into four pots of money, i.e.:

ERG	$16 billion
TRS	$4 billion
Competitive Research Funding for Local SF Degree Sector	$3 billion
Tuition Waiver for Research Postgraduates	$3 billion

6.10 Due to historical reasons, the different pots are ring-fenced and cannot be re-deployed to other purposes within the ambit of the REF. While there is severe deficit in the ERG pool, it is expected that there may be surpluses in the others. It is suggested to remove the above-mentioned restriction so that the RGC may, after having fully met the original intentions of the different schemes, including providing sufficient research funds for self-financed institutions, theme-based research and fully covering the tuition fees of all local students of all UGC-funded research postgraduate programmes, flexibly redeploy the uncommitted funding for other pressing requirements. In conjunction with the enhancement of the capital, it is therefore considered equally desirable to rationalise the use of different pots of REF for more effective and flexible deployment of funding resources. It should however be noted that the redeployment of the uncommitted funding for other pressing requirements should only take place after having fully met the original intentions of the different schemes.

Recommendation 1b

To rationalise the use of different pots of REF for more effective and flexible deployment of funding resources.

To Boost Research Support from the Private Sectors including Donations

6.11 Investing in research has major multiplier effect that benefits not just the researchers but also the business sector and the society as a whole. As such, it is important to entice the support and engagement of other stakeholders in the research enterprise. For all those economies with a high ratio of research expenditure to GDP (e.g. Mainland China and Singapore), it is noted that the major driver is the private sector and not the government whereas in Hong Kong, funding for R&D has all along been government-led, despite the fact that we do not have research expenditure on national defense. As indicated in the table at **Annex B**, the share of business sector in R&D expenditure takes up less than 45% over the years. As an inducement to private companies to increase investment in technological R&D, the Government has undertaken to provide additional tax deduction for expenditure incurred by enterprises on R&D. It is hoped that with this measure, the ratio of private sector expenditure on R&D would be increased, which will make R&D funding more sustainable.

6.12 To enhance the impact of the funding for research and to diversify the funding sources, it is desirable to attract more non-government funding from the private sector and / or philanthropists via donation matching. To strengthen the higher education sector's fund-raising capabilities and encourage the growth of a philanthropic culture in the community, the Government introduced the concept of Matching Grant Scheme (MGS). Since its first introduction in 2003, institutions had raised some $14.8 billion in private donations and a total of $7.4 billion of matching grants had been allocated over the past six rounds of the MGS. The sum total was an additional $22.2 billion for the universities over the past decade or so. The seventh round, covering the SF post-secondary education sector, was launched in August 2017 for a period of two years and the Government has reserved $500 million for such matching purpose. The MGS has been successful in cultivating a stronger philanthropic culture in the community towards investment in education, fostering diversification of funding sources and securing additional resources for the provision of quality higher education. To this end, the Financial Secretary has proposed in the 2018-19 Budget to allocate $2.5 billion to launch the eighth MGS for 10 publicly funded post-secondary education institutions.

6.13 Although the previous MGS scheme was not specifically targeted for research purpose, many institutions had based their fund-raising strategies in supporting research. Having regard to the success of the MGS, it is recommended that the Government should introduce a specific grant matching scheme, namely, Research Matching Grant Scheme, and invite the private sector to join hands in providing funding support to the post-secondary sector. R&D expenditure and donations from the private sector, industries and philanthropists secured by individual local degree-awarding institutions would be matched by the Government for research-related purpose. It is acknowledged, however, that ITF has operated the UICP since 1999 but, if affirmative, the scheme proposed here will be the first time the Government set up an 'unspecified' matching grant specifically for research. As R&D expenditure and donations can be made for a particular university / project, irrespective of discipline, and the Government will match the donations, universities will then be able to tap more funding sources to conduct large-scale research and enhance the fostering of a philanthropic culture.

6.14 There is an observation that Hong Kong does not have any obvious driver to incentivise the development of its R&D scene given the absence of military and defense needs, lack of natural resources, etc. As such, an effective driver has to be identified and since Hong Kong has all along been driven by economic development, this can be the driver if it can be demonstrated that R&D boost Hong Kong's economy. Hong Kong needs success stories in the mould of Google, Amazon, Alibaba, Tencent, etc. to create a halo effect for companies employing R&D to fuel their successes. Once this halo effect takes a firm hold in the Hong Kong psyche, the likelihood of companies in Hong Kong investing more in R&D will increase. When the private sector becomes more forthcoming to be engaged in collaborative research, more opportunities for research talent will be provided in the private sector under the Research Matching Grant Scheme and the talent will undoubtedly strengthen the R&D support and benefit the industry in the long run. The Public-Private Partnership model adopted by the USA would serve as a good reference example in the context that the involvement of the Government would help reduce the risk concerned and pose more attraction to the private sector in becoming a partner of a research project.

Recommendation 1c

To boost private R&D expenditure and donations in the research community by setting up a Research Matching Grant Scheme for local degree-awarding institutions.

SUSTAINABLE STRATEGIES AND SUPPORT FOR RESEARCH TALENT

6.15 As mentioned in CE's Policy Address in October 2017, the Government has been actively promoting the R&D in Hong Kong in recent years. For Hong Kong to be developed into an international research hub, sustainable strategies and support for research talent and to cultivate the research culture are pre-requisites to the path of success. Education, proper training and appropriate engagement of PhD graduates and postgraduate students are very important to research given their significant contribution in the course of research. As such, it is imperative to secure a supply of talent with scientific and research skills for the R&D in Hong Kong. To this end, a number of new initiatives are suggested.

Nurturing New Talent: Postdoctoral Fellowship

6.16 In the course of building up the momentum of R&D, pooling of research talent and nurturing them at early stage (say, within three years of doctoral graduation) is essential and crucial to meet future challenges. Over the past decade, the UGC has endeavoured to enhance the support for research postgraduates such as setting up the Hong Kong PhD Fellowship Scheme in 2009. The Scheme is open for application globally and has attracted research postgraduate students from over 120 countries / regions. Recently, it has been approved that UGC-funded dual / joint PhD programmes, which have at least two years of normative study period to be in residence study in local universities, would be included into the Scheme. The number of research postgraduate places to be reserved for the Tenth Round of Hong Kong PhD Fellowship Scheme and subsequent exercises would be increased, and the monthly stipend as well as the conference and research-related travel allowance for awardees would be increased, effective from 2018/19, from HK$20,000 and HK$10,000 to HK$25,100 and HK$12,600 respectively.

6.17 Furthermore, starting from the 2018/19 academic year, non-means-tested tuition waiver would be provided to eligible local students enrolled in UGC-funded research postgraduate programmes. In the light of the growing importance of research activities, it is considered beneficial to augment the support to cover post-doctorate graduates in Hong Kong. To further build up our research talent pool and to nurture a research culture, a new scheme to support postdoctoral researchers should be introduced. The proposed scheme aims to encourage doctoral graduates in pursuing career in research and provide

support to promising researchers at a pivotal time in their careers, so as to secure a supply of talent with scientific and research skills for R&D in Hong Kong.

6.18 The proposed scheme should be competitive in nature. As a starting point, it is proposed to provide 50 places[10] in each round of exercise, and applications will be divided into two broad streams (i.e. Science and Technology, including medicine and engineering; and Humanities, Social Science and Business Studies). Each awardee is suggested to be granted with a fellowship stipend covering basic salary as well as allowance for conference and / or research-related travel for a maximum of three years with a full-time appointment at a UGC-funded university. Subject to the number of quality applications and comments from the relevant subject expertise, the number of places and the amount of stipend should be reviewed as appropriate in future.

Sustained Development of Research Talent: Research Fellows and Senior Research Fellows

6.19 For Hong Kong to be developed into an international research hub, sustainable development of research talent is as equally important as nurturing and grooming new ones. As such, ensuring adequate support for full-time researchers is also of paramount importance and therefore other initiatives are proposed. Modelling on similar schemes offered by the Croucher Foundation locally and other funding agencies elsewhere, it is suggested to introduce two additional fellowship schemes, namely RGC Research Fellow and RGC Senior Research Fellow (for applicants at Associate Professor and Professor levels respectively). The duration of support should be for five years in the first instance, to provide sustained support for the research development of a small group of exceptionally outstanding academics. These initiatives should help strengthen the research staff force and assist the universities to attract and retain talent. As a start, the Task Force would like to propose the award of 10 to 15 RGC Research Fellows and up to 10 RGC Senior Research Fellows in each round of exercise. Again, subject to the number of quality applications, the number of places and the amount of stipend should be reviewed as appropriate in future.

6.20 Like any other careers, a researcher can only progress (career-wise) if there are suitable opportunities in the market. The creation of suitable R&D opportunities in the private sector, which could be incentivised by the

[10] Such number of places accounts for 3.6% of the total number of PhD graduates from full-time UGC-funded programmes in 2015/16.

Government, is also a critical element of a sustainable R&D ecosystem.

Recommendation 2

To strengthen the research staff force and to nurture / sustain the development of research talent by introducing three fellowship schemes, namely a postdoctoral fellowship scheme, a research fellow scheme and a senior research fellow scheme under the RGC.

SUPPORT FOR RESEARCH INFRASTRUCTURE

Better Efficiency and Effectiveness in the Use of Competitive Research Funding

6.21 To meet the challenges arising from the increasing number of applications and growing complexity of the selection mechanism, the UGC and the RGC decided previously to conduct the RGC Review and to do so in two phases. The Phase I Review, completed in May 2017, had examined macro issues such as the portfolio balance of the research funding schemes administered by the RGC, the RGC's structure and good practice in overseas funding agencies. It is suggested that the RGC Phase II Review should study issues including the time commitment of the Principle Investigators, quality of the assessment, monitoring processes conducted by the RGC assessment panels and committees as well as project renewal. In addition, the relevant views and comments from the stakeholders received in the consultation exercise as consolidated at **Annex G** should also be taken into consideration in the course of the review.

Recommendation 3

RGC's Review (Phase II) to include technical aspects such as time / commitment of Principal Investigators, quality of assessment, monitoring processes and project renewal.

Strengthening the Effectiveness of the R-Portion

6.22 Recurrent grants provided by the UGC to each UGC-funded university comprise a Block Grant and funds provided for specific purposes. The amount of Block Grants to universities is calculated based on three elements,

i.e. teaching, research and professional activity. The R-portion, constituting about 23% of the Block Grant, is disbursed to the universities as infrastructure funding to enable universities to provide both the staffing and facilities necessary to carry out research, and to fund a certain level of research. The current mechanism adopted for R-portion serves as a proxy reference for allocation and the disbursement of the Block Grant. It would allow universities to have autonomy in and responsibility for determining the best use of the resources vested with them.

6.23 The feedback received from the research sector over the years in connection with the allocation mechanism of the R-portion are summarised below.

Effectiveness in Achieving the Intended Objectives

6.24 The objectives of introducing a competition element into the allocation mechanism of the R-portion are to promote research excellence by linking it to achievements on competitive research award. As the RAE is being conducted every six years or so, there has been concern on whether there are other alternatives that may provide more updated information of universities' latest research output. Moreover, the size of the R-portion is about four times the total amount of funding available for competitive research grant bidding under the RGC. In the light of the development and the research performance of the UGC sector since the implementation of the competitive allocation mechanism of the R-portion, the effectiveness of the mechanism against its intended objectives should be revisited and evaluated to ascertain whether the objectives are being met in full.

Institutional Funding Stability

6.25 The UGC Block Grant serves to provide stable recurrent funding to universities. As the R-portion is disbursed to meet the expenses for staffing and facilities pertinent to research activities, it warrants further study on whether the prevailing funding allocation mechanism is having beneficial effect to universities as far as the stability of funding is concerned.

Calculation Basis

6.26 Under the prevailing arrangement, the funding results in the past 12 months of the competitive peer-reviewed schemes under the RGC ERG are adopted for the calculation of the competitive R-portion. This is on the consideration that the annual competitive allocation should reflect the latest

performance of universities in obtaining the RGC ERG, and that the arrangement encourages competition and provides timely feedback on universities' research performance. One of the sector's concerns in this regard is that the funding results in the immediate past 12 months may not necessarily be representative of the performance of the university concerned in obtaining the RGC ERG.

6.27 Requests have been raised by the sector from time to time to include non-UGC/RGC grants, such as the ITF and HMRF, in the calculation of the competitive part of the R-portion. Given the views of the sector, there is a need to revisit the funding schemes adopted for calculation of the competitive part of the R-portion, and considering whether it is beneficial to impose certain criteria/standards in respect of any funding schemes for inclusion in the calculation of the competitive R-portion. For example, the scheme(s) must be competitive; the grant application(s) must be peer-reviewed and assessed by assessment panel(s) involving members external to the funding body(ies); the research grants are for use in Hong Kong and by researchers of the UGC-funded universities; etc.

Coverage of "On-costs"

6.28 The R-portion is disbursed to the universities as infrastructure funding to enable universities to provide both the staffing and facilities (e.g. accommodation and equipment) necessary to carry out research, and to fund a certain level of research. The definition of "on-costs" has been arousing acute concern in the research sector and the general observation is that it will be more desirable that items to be included as "on-costs" should be clearly defined, in particular on the intangible investments such as staff training, software development, etc. To ensure funding is sufficient to support research, both the time of the researchers involved and the extensive "on-costs" associated with carrying out research project work should be properly identified and funded. As such, a review on the R-portion should cover the issue of "on-costs".

6.29 Given UGC's unique role as an independent advisor to the Government on the funding and strategic development of the higher education sector, the UGC is in the best position to conduct a comprehensive and holistic review on the funding mechanism of the R-portion so as to better meet the requirements of the research ecosystem of the universities and to address the concerns of the sector. The scope of the review should cover its purpose, how the allocated funding including the R-portion is deployed within universities, whether "on-costs" are adequately covered, etc. In the course of the review, the relevant views and comments from the stakeholders received in the

consultation exercise as consolidated at **Annex G** should also be taken into consideration.

Recommendation 4

The UGC to conduct a comprehensive and holistic review on the R-portion including the issue of "on-costs" (indirect cost).

Incentivise Cross-institutional / Cross-disciplinary Collaborations

6.30 In Hong Kong, while funding is available for cross-institutional and / or cross-disciplinary collaborative research, joint projects of such nature by far are mostly small-scale and time-limited. As RAE informs funding of individual universities separately, it is not clearly enunciated in such collaborative projects how the funding allocation and research contributions of individual researchers are being considered at the institutional level. Under the current administrative practices and performance management in individual universities, career advancement of researchers is primarily focused on their performance on individually-based research projects, such as the number of research projects funded by the GRF under the RGC. There is also a general concern that funding support for large-scale research is limited and fragmented in the research sector. Strategies to encourage more joint collaborative research among institutions should be formulated if institutions' respective research capacity is to be enhanced to secure critical mass and balance across disciplines and sectors of the research community.

6.31 The RGC under the aegis of the UGC has been supporting collaborative academic research in the UGC-funded institutions through various funding schemes, such as the CRF, TRS and AoE. It is increasingly recognised that inter-disciplinary research plays an important role in the development of successful innovative projects. New mechanism and additional funding besides the CRF, TRS and AoE should therefore be considered to promote effective and efficient inter-institutional / inter-disciplinary collaboration. This gives rise a suggestion that the UGC should review the above three existing funding schemes and consider the possible combination of them to form a new scheme endeavoured to address the identified needs of the industry and develop potential new market segments delivering economic impact and technology advancement.

6.32 In the course of the review, it is important that the distinct characteristics of the three schemes are well taken into account and preserved such that the existing needs will be duly catered for, and the needs of the research community currently funded by the three schemes will not be undermined as a result of the review. A flexible mechanism should be introduced to allow new schemes to be deployed to support special research of "hot topics of the day" as well as emerging issues, which may cover areas identified by stakeholders, including the Government and the society at large, in a timely manner. As such, there should be no restriction or preference with regard to the discipline for the projects to be funded, but subject to the strategic planning on addressing the challenges facing the society at large in consultation with the Government and universities.

6.33 This new initiative should also fund research institutes jointly set up by universities / institutions, at a substantial level of support to ensure long-term sustainability and social impact to be achieved in a timely manner. To incentivise collaborative research projects involving multiple research disciplines and across universities and institutions, the universities / institutions should be encouraged to set up independent research institutes with joint ownership arrangement to conduct research topics of strategic and regional importance that are otherwise unattainable by individual universities / institutions and existing funding mechanisms in Hong Kong.

6.34 The research institutes set up by universities / institutions should serve as new conduits and nuclei for collaboration and joint projects, which require multiple researchers of different areas of expertise from different universities / institutions and shared core facilities requiring substantial capital investments. In addition, these research institutes would also provide excellent opportunities for collaboration with the industries and universities / institutions outside Hong Kong. The USA model on joint research collaboration upholding sharing of expertise and intellectual property may serve as a good reference. It is recognised, however, that the recommendation of setting up large, joint research institutes is not intended to replace individual investigator-driven competitive research nor the so-called curiosity-driven research or other scholarly activities.

Recommendation 5

To incentivise cross-institutional / cross-disciplinary collaborations by providing sustainable support.

The UGC to rationalise and / or review the existing three funding schemes under the RGC targeted for research with substantial impact, i.e. CRF, TRS and AoE, and consider the possible combination of them to form a new scheme to, in addition to catering for the existing and future needs, support proposals from research institutes set up by universities as well as research incentives of strategic priorities.

COORDINATION AMONG DIFFERENT RESEARCH FUNDING BODIES

Strengthening Coordination of Funding Bodies

6.35 Strong coordination among funding bodies is important to enhance effectiveness and efficiency of resource allocation. The results of the stocktaking exercise conducted by the Task Force on research funding schemes in Hong Kong show that there are a number of entities providing a wide range of funding support in the higher education sector for research at different stages of development. The Task Force recognises the merits of better coordination among different funding bodies to allow the research community to identify strengths and gaps in the research capabilities of Hong Kong, in order to devise new strategies for research funding, thereby maximising resources and alleviating the possibility of resource overlapping. Collaboration of the funding bodies would help achieve a good balance among basic, translational and applied research. It would also save the administrative work to be taken by researchers or research groups such that they do not need to apply funding from various sources at the same time to secure financial resources for a research project.

6.36 The Task Force is therefore of strong opinion that collaboration among different funding bodies be strengthened and enhanced so as to help meet new socio-economic needs and build up a critical mass of research capacity. To enhance coordination and efficiency in overall research funding, the most ideal scenario is to put in place a new research funding regime to consolidate and integrate the various government funding programmes. Given the various funding schemes under the purview of different bodies have divergent natures, aims, components and features, target participants, assessment criteria and variation in funding cycles, integrating all funding schemes into a single research funding regime with such magnitude requires detailed planning and careful considerations to develop an adequate governance structure. It hence

should be taken forward by stages and be achieved as a long-term goal.

6.37 To achieve the above goal, consideration should be given to set up a single, overarching research steering council for the purpose. In the course of overseeing Hong Kong's ecosystem on R&D, the proposed overarching body would help formulate high-level quality strategies and advice to balance the objectives of independent scientific discovery and responsiveness to societal needs. It would provide a comprehensive view on the research landscape, and identify strengths and gaps of research needs across the purviews of different funding bodies. The overarching coordinating body should also explore the possibility of standardising the operation procedures of various funding bodies, such as a single entry point for funding applications, sharing of peer review and monitoring process, and betterment of the research ecosystem in Hong Kong in the long run.

6.38 It is understood that different disciplines have different modes of research that calls for different funding strategies, objectives and peer review process. To cater for such differences, the research steering council should be organised into streams such as biomedical sciences, engineering science or humanities and social sciences. To promote the translation of basic research into innovation and social impact, a vertically-integrated structure that includes basic, translational and applied research under each stream should be created to enable holistic strategy formulation. Increasing vertical integration, in addition to enhancing coordination across funding councils and agencies, has been the focus of the latest reforms on public research funding bodies of leading developed countries, as governments attempt to drive better integration between research and innovation.

6.39 It is suggested that the membership of the research steering council should include representatives from the private sector as well. Involving the private sector and philanthropists as key stakeholders in determining the research direction of Hong Kong acts as an incentive for them to feel involved in the growth of the R&D sector in Hong Kong. Insight of representatives from the industry is also valuable as they are well informed of the commercialisation potential of research output.

6.40 More communication between the funding agencies for better mutual understanding of their respective assessment stringencies and criteria would be preferable before working out any alignment. It is envisaged that the academic community would welcome better communication and direct contacts with relevant funding bodies as a means to minimise administrative overload. It is therefore suggested that in the interim, an internal government liaison group

be established as soon as possible to serve as a platform for various funding bodies to meet regularly and share information on their research directions, latest trends and best practice in administration of funding schemes. Representatives of various funding bodies, including the EPD, FHB, ITC, PICO, RGC, etc., should all be invited to join the liaison group for effective and direct discussion / communication on issues of common interests regarding research policy and funding, or any forms of cooperation such as the establishment of a central database on research.

Recommendation 6

As a start, to strengthen and enhance the coordination among different funding bodies via the setting up of an internal government liaison group to regularly share their research directions and coordinate among them issues of common interests on research.

To consider, in the long run, setting up an overarching research steering council to formulate long-term strategic plan on research policy and funding; to standardise the operating procedures of various funding bodies to enhance efficiency and effectiveness; and to better integrate research into the innovation ecosystem. To cater for different modes of research among disciplines, consideration should be given for the council to be organised into streams by major discipline and should vertically integrate basic, translational and applied research to ensure a holistic approach to research funding policy.

Setting up Central Database on Research

6.41 Consistent and unique researcher identifiers would bring about significant benefits, in terms of increased efficiency, transparency and interoperability in the research data landscape. To address the ongoing challenges of accessing comprehensive information on researchers faced by relevant parties, it is suggested that a central data registry be established to capture the updated research profile of each researcher, such as information on publications, projects conducted, grants records, etc., for the benefit of the funding bodies and researchers in the long run.

6.42 As deliberated and approved by the RGC in June 2018, a common researcher identity, namely the ORCID[11], will be adopted for RGC grants applications starting from the 2018/19 cycle. Following the support by UGC-funded universities upon consultation, UGC has decided to formally adopt the ORCID as a mandatory requirement in the RAE 2020. In the light of the increasing reference value of researcher ID, the call for a central registry on researchers becomes imminent. It is believed that adopting a common researcher identity and setting up a central database on research will greatly facilitate the handling of grant applications by the various funding bodies. Upon the availability of such a common database, the reviewers can make use of the database for access to the background and track record of researchers more readily and the peer review process will be substantially facilitated. The common database may also serve to promote the societal importance of research to the public by promoting successful and impactful research accomplished by our higher education sector, in addition to the achievements of individual researcher.

6.43 In anticipation of the growing reference value of researcher ID, there is a need in the long run to set up a central archive on research to serve as a depository of information on researchers, reviewers, projects, application, grants records, etc. The availability of a central database on research will bring about significant benefits, in terms of increased efficiency, transparency and interoperability in the research data landscape. It will also facilitate capacity mapping and hence enhance collaboration among funding bodies, academics, universities and the industries. Limited access may be granted to users for a variety of purposes as suggested above, careful deliberation and design of the database would be required in due course.

6.44 Regarding the concerns over unauthorised or illegal use of ORCID iDs and related legal implications, it should be noted that there is an indemnity clause in the contract agreement between ORCID and individuals registering for it. Further, the data users (such as UGC-funded universities, UGC, ORCID Inc. or as the case may be) should comply with Data Protection Principles in Schedule 1 to the Personal Data (Privacy) Ordinance.

[11] The ORCID iD is a free unique identifier that can connect the researcher and his/her research outputs throughout his/her career. It provides common database or registry service on its website with free search engine on researchers using their names or ORCID iDs. All the UGC-funded universities have already registered as member organizations of ORCID and are promoting the use of ORCID iD in their respective institutional repositories. It is also widely used in overseas jurisdictions.

Recommendation 7

To adopt a common researcher identity, e.g. the Open Research Contributor ID (ORCID), for grants applications.

In the long run, to set up a central database on research to serve as a depository of information on researchers, reviewers, projects, application and grants records for the benefit of the funding bodies and researchers.

CHAPTER 7

CONCLUSION

7.1 To nurture the younger generation to meet changing needs and enable them to pursue their respective talents, the CE announced in July 2017 that eight education-related areas had been identified for further review. "Strengthening funding support for research" was one of them. The CE further announced in her Policy Address in October 2017 to set up a task force for a holistic review of the existing research support strategy as well as the level and allocation mechanism of research funding for the higher education sector in Hong Kong. This Task Force was set up for the purpose of taking forward the review.

7.2 In the course of the review, the Task Force studied closely the prevailing research landscape in Hong Kong and the experience of the research ecosystems in other regions. With due regard to its terms of reference and a set of guiding principles for research, the Task Force deliberated and put forth seven recommendations aiming to allocate research funding in a more streamlined and transparent manner, incentivise the sector to engage and collaborate with industry and other end-users, encourage the sector to engage in research commercialisation as well as knowledge transfer with industry and the community.

7.3 Thanks to the generous and valuable views, comments and feedback provided by academics, researchers, administrators, industry and other relevant stakeholders in the consultation exercise, the Task Force now presents the results together with the final recommendations in this Review Report for the consideration of the Government.

7.4 The Task Force believes that the implementation of its recommendations will serve as a timely response to address the needs and concerns of the research sector and hope that they will receive the Government's favourable acceptance. It looks forward to the further strengthening of our research sector for the long-term and sustainable societal and economic development of Hong Kong.

Annex A

Task Force on Review of Research Policy and Funding

Membership

Chairman
Professor TSUI Lap-chee, GBM, GBS, JP
President, The Academy of Sciences of Hong Kong

Members
Dr Richard ARMOUR*
Advisor

Dr Sunny CHAI Ngai-chiu, BBS
Deputy Chairman
Hong Kong Federation of Industries
Group Managing Director
Fook Tin Groups Holdings Ltd.

Mr David FOSTER
Director
Croucher Foundation

Professor Paul LAM Kwan-sing, SBS, JP
Chair Professor
Department of Chemistry
City University of Hong Kong

Ms Nisa LEUNG Bernice Wing-yu, JP
Managing Partner
Qiming Venture Partners

Professor Richard WONG Yue-chim, SBS, JP
Chair of Economics
Philip Wong Kennedy Wong Professor in the Political Economy
School of Economics and Finance
University of Hong Kong

Ex-officio members

Ms Annie CHOI Suk-han, JP
Commissioner for Innovation and Technology
Innovation and Technology Bureau

Mr Brian LO Sai-hung, JP (*until 29 July 2018*)
Deputy Secretary for Education (1)
Education Bureau

Mr Rex CHANG Wai-yuen, JP (*with effect from 30 July 2018*)
Deputy Secretary for Education (1)
Education Bureau

Professor Benjamin W. WAH, JP
Chairman
RGC

Professor James TANG Tuck-hong
Secretary-General
UGC Secretariat

Assistant to Chairman
Ms Rita LUN

Observer
Mr Carlson TONG, SBS, JP
Chairman
UGC

Secretary
Mr David LEUNG
Deputy Secretary-General (2)
UGC Secretariat

**Dr Armour was an ex-officio member of the Task Force in his capacity as Secretary-General, UGC Secretariat up to 31 December 2017. He serves as a member of the Task Force afterwards.*

Annex B

Research and Development (R&D) Expenditure by Performing Sector

Year	R&D Expenditure				
	Business sector	Higher education sector	Government sector	Total	
	(HK$ Mn) (% of total GDP)	(HK$ Mn) (% of total GDP)	(HK$ Mn) (% of total GDP)	(HK$ Mn)	Ratio to GDP (%)
2011	6,194 (0.32%)	7,155 (0.37%)	596 (0.03%)	13,945	0.72
2012	6,647 (0.33%)	7,576 (0.37%)	592 (0.03%)	14,816	0.73
2013	7,017 (0.33%)	7,984 (0.37%)	612 (0.03%)	15,613	0.73
2014	7,437 (0.33%)	8,632 (0.38%)	658 (0.03%)	16,727	0.74
2015	7,994 (0.33%)	9,551 (0.40%)	726 (0.03%)	18,271	0.76
2016	8,528 (0.34%)	10,271 (0.41%)	914 (0.04%)	19,713	0.79

Source: "Hong Kong Innovation Activities Statistics (2014-2016 Edition)", Census & Statistics Department

Annex C

Research Expenditure of UGC-funded Universities, by Source of Funds, from 2012/13 to 2016/17

資金來源（百萬港元） **Source of funds (HK$ million)**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**
香港特區政府 HKSAR Government	6,192.1 (82%)	6,558.9 (82%)	7,186.2 (83%)	7,943.0 (83%)	8,485.8 (83%)
教資會 UGC	4,962.0 (65%)	5,175.2 (65%)	5,618.2 (65%)	6,146.9 (64%)	6,547.0 (64%)
研資局 RGC	702.1 (9%)	755.9 (9%)	843.4 (10%)	945.2 (10%)	998.3 (10%)
政府及其相關機構 Government & Government-related organisations	528.0 (7%)	627.7 (8%)	724.5 (8%)	851.0 (9%)	940.5 (9%)
香港私人資金 Hong Kong private	1,216.0 (16%)	1,253.3 (16%)	1,256.2 (15%)	1,418.5 (15%)	1,569.2 (15%)
香港以外 Non-Hong Kong	168.2 (2%)	172.0 (2%)	189.4 (2%)	189.3 (2%)	215.9 (2%)
總計 **Total**	**7,576.3** **(100%)**	**7,984.2** **(100%)**	**8,631.8** **(100%)**	**9,550.8** **(100%)**	**10,270.9** **(100%)**

註釋: 括號內的數字顯示金額佔該年度總額的百分比。
數字只包括教資會資助的大學。這些大學的財政年度由每年 7 月至翌年 6 月。

Notes: Figures in brackets represent the percentages in respect of total in the respective year.
Figures cover only the UGC-funded universities. The financial year of these universities starts in July of a year and ends in June of the following year.

Source: "Hong Kong Innovation Activities Statistics 2016", Census & Statistics Department

Annex D

University Grants Committee (UGC)

Terms of Reference

1. To keep under review in the light of the community's needs :

   i. the facilities in Hong Kong for education in universities and such other institutions as may from time to time be designated by the Chief Executive of the SAR;

   ii. such plans for development of such institutions as may be required from time to time;

   iii. the financial needs of education in such institutions; and

2. To advise the SAR Government :

   i. on the application of such funds as may be approved by the Legislature for education in such institutions; and

   ii. on such aspects of higher education which the Chief Executive of the SAR may from time to time refer to the Committee.

Annex E

Research Grants Council (RGC)

Terms of Reference

1. To advise the SAR Government, through the UGC, on the needs of the institutions of higher education in Hong Kong in the field of academic research, including the identification of priority areas, in order that a research base adequate for the maintenance of academic vigour and pertinent to the needs of Hong Kong may be developed; and

2. To invite and receive, through the institutions of higher education, applications for research grants from academic staff and for the award of studentships and post-doctoral fellowships; to approve awards and other disbursements from funds made available by the SAR Government through the UGC for research; to monitor the implementation of such grants and to report at least annually to the SAR Government through the UGC.

Annex F

Research Funding Schemes in the Mainland and Other Jurisdictions

Mainland

In the Mainland, major research funding is provided by the National Natural Science Foundation of China (NSFC) and the Ministry of Science and Technology while the Chinese Academy of Sciences and Chinese Scholarship Council mainly provides fellowship programmes or awards to nurture scientists and academics. The NSFC is the largest Chinese research funding agency for basic research and application-oriented research in the natural sciences and is directly under the jurisdiction of the State Council. In 2016, the total funding for supporting all projects / programmes amounted to RMB¥26.8 billion (~HK$31.8 billion).

Australia

2. In Australia, there are two major funding bodies, namely the Australian Research Council (ARC) and the National Health and Medical Research Centre (NHMRC). The ARC is a Commonwealth entity and advises the Australian Government on research matters, administers the National Competitive Grants Programme (NCGP), a significant component of Australia's investment in R&D, and has responsibility for Excellence in Research for Australia (ERA) (Australia's national research evaluation framework which identifies / promotes excellence across the full spectrum of research activity in Australia's higher education institutions). The ARC supports fundamental and applied research and research training through national competition across all disciplines. In addition, the ARC brokers partnerships between researchers and industry, government, community organisations and the international community. The NHMRC is Australia's major funding body for research across the full spectrum of health and medical research, from basic science through to clinical, public health and health services research. The funding from the ARC and NHMRC puts much emphasis in partnership between researchers and industry and community organisation as well as international community and are featured with research for indigenous development.

Canada

3. There are three major Canadian Federal granting agencies in Canada, namely the Social Sciences and Humanities Research Council (SSHRC), Natural

Sciences and Engineering Research Council of Canada (NSERC) and Canadian Institutes of Health Research (CIHR). SSHRC is the federal research funding agency that promotes and supports postsecondary-based research and research training in the humanities and social sciences. It is governed by a council appointed by the federal government to represent the interests of the academic, public and private sectors. The main categories of funding programmes under the SSHRC include the Insight Programme, Connection Programme and Talent Programme. The major feature of the Connection Programme is the partnership grants which provide support to foster collaboration between researchers and public, private or the non-profit sector.

Singapore

4. In Singapore, The National Research Foundation (NRF), a department within the Prime Minister's Office, sets the national direction for R&D by developing policies, plans and strategies for research, innovation and enterprise. It also funds strategic initiatives and builds up R&D capabilities by nurturing research talent. NRF is the secretariat to the Research, Innovation and Enterprise Council (RIEC) chaired by the Prime Minister. It is the main governmental organisation providing funding on a competitive basis to universities and coordinating different national research agencies. Under the RIEC, there are a number of key government agencies and R&D funding bodies, including Singapore Economic Development Board (provides funding support for companies to conduct R&D), Standards, Productivity and Innovation Board (SPRING) (focuses on helping SMEs improve their technological capabilities, and encouraging the growth of the start-up ecosystem), Agency for Science, Technology and Research (A*STAR) (performs economically-oriented R&D to support companies), Academic Research Division of Ministry of Education (ARD of MoE) (formulates, implements and reviews academic research and research manpower policies and funding under the RIE Masterplan for the universities, polytechnics and the Institute of Technical Education) and the National Medical Research Council (provides research funds to healthcare institutions and awards competitive research funds for individual projects). The types of funding include individual research, midstream research, joint research schemes and fellowship programmes. The A*STAR, one of the largest public research funders under the Ministry of Trade and Industry, has an explicit mission to bridge the gap between academia and industry and to drive mission-oriented research that advances scientific discovery and technological innovation. The agency has 18 research institutes and several consortia.

5. In view of the need to build up its community of home-grown researchers and thought leaders in social science and the humanities, the

government in Singapore set up the Social Science Research Council (SSRC) in 2016. The SSRC, led by former head of civil service and supported by the ARD of MoE with a funding of SGD350 million (~HK$2.1 billion), serves as a focal point of efforts with concerted direction to develop talent and strengthen social science and humanities research that benefits social and economic development in Singapore and the region. The Social Science Research Thematic Grant, under the purview of SSRC, encourages high-quality and impactful social science and humanities research in areas of strategic relevance to Singapore.

EU

6. Established by the European Commission, Horizon 2020 is the EU Framework Programme for Research and Innovation with nearly €80 billion (~HK$732.56 billion) of funding available over seven years (2014 to 2020). It is based on the idea of bringing together all of the previous EU's research and innovation funding programmes under one common strategic framework. The programmes include the following:

(a) Excellent Science - to reinforce and extend the excellence of the Union's science base and to consolidate the European Research Area in order to make the Union's research and innovation system more competitive on a global scale.

(b) Industrial Leadership - to speed up development of the technologies and innovations that will underpin tomorrow's businesses and help innovative European SMEs to grow into world-leading companies.

(c) Societal Challenges - to reflect the policy priorities of the Europe 2020 strategy and address major concerns shared by citizens in Europe and elsewhere. A challenge-based approach will bring together resources and knowledge across different fields, technologies and disciplines, including social sciences and the humanities. This will cover activities from research to market with a new focus on innovation-related activities, such as piloting, demonstration, test-beds, and support for public procurement and market uptake.

(d) Spreading Excellence and Widening Participation - to fully exploit the potential of Europe's talent pool and ensure that the benefits of an innovation-led economy are maximised and widely distributed across the EU.

(e) Science with and for Society - to build effective cooperation between science and society, to recruit new talent for science and to pair scientific excellence with social awareness and responsibility. To this end, a series of programmes are to be conducted under the approach of "Responsible Research and Innovation".

(f) Focus Areas - to focus efforts on fewer topics with bigger budgets to directly support the Commission's political priorities. Four focus areas have a combined budget of €7 billion (~HK$64.09 billion): (i) Building a low-carbon, climate resilient future, (ii) Connecting economic and environmental gains - the Circular Economy, (iii) Digitising and transforming European industry and services, and (iv) Boosting the effectiveness of the Security Union.

(g) European Institute of Innovation and Technology (EIT) - an independent EU body set up in 2008 to enhance Europe's ability to innovate by nurturing entrepreneurial talent and supporting new ideas. Together with its Knowledge and Innovation Communities (KICs), the EIT creates favourable environments for creative thoughts to enable world-class innovation and entrepreneurship to thrive in Europe. The EIT brings together the "knowledge triangle" of business, education and research to form dynamic cross-border partnerships.

(h) Euratom - to pursue nuclear research and training activities with an emphasis on continually improving nuclear safety, security and radiation protection, notably to contribute to the long-term decarbonisation of the energy system in a safe, efficient and secure way.

7. The European Research Council (ERC) is part of the Horizon 2020 programme. It has around €13 million (~HK$119.04 million) of funding available for funding schemes addressing young and senior individual researchers or small groups of individual researchers. The objective is to promote excellence in research by funding frontier research, cross-disciplinary proposals and pioneering ideas in new and emerging fields which introduce unconventional and innovative approaches. There is one call per year for each ERC grant as follows:

(a) "Starting Grants" - for young, early-career top researchers (2-7 years after PhD) and up to €1.5 million (~HK$13.73 million) for a period

of 5 years;

(b) "Consolidator Grant" - for already independent excellent researchers (7-12 years after PhD) and up to €2 million (~HK$18.31 million) for a period of 5 years;

(c) "Advanced Grant" - for senior research leaders with significant research achievements in the last 10 years and up to €2.5 million (~HK$22.89 million) for a period of 5 years; and

(d) "Proof of Concept Grants" - for ERC grant holders who want to check the market and / or innovation potential of research results from ERC projects and up to €150,000 (~HK$1.37 million) for a period of 12 months.

UK

8. In the UK, UK Research and Innovation (UKRI) brings together the seven Research Councils (RCs), Innovate UK and a new organisation, Research England. The seven RCs are Arts and Humanities Research Council (AHRC), Biotechnology and Biological Sciences Research Council (BBSRC), Engineering and Physical Sciences Research Council (EPSRC), Economic and Social Research Council (ESRC), Medical Research Council (MRC), Natural Environment Research Council (NERC) and Science and Technology Facilities Council (STFC). Each year the RCs invest around £3 billion (~HK$31.08 billion) in research covering the full spectrum of academic disciplines from medical and biological sciences to astronomy, physics, chemistry and engineering, social sciences, economics, environmental sciences and the arts and humanities. Some research funding schemes, such as the Transformative Research Technologies Funding, are coordinated by several Councils. Innovate UK is the UK's innovation agency sponsored by the Department for Business, Energy & Industrial Strategy. It drives productivity and growth by supporting businesses to realise the potential of new technologies, develop ideas and make them a commercial success.

9. Research England is a new council within UKRI, operating from April 2018. As a key component of the research funding system, Research England will oversee UKRI's England-only functions in relation to university research and knowledge exchange. This includes providing grant funding to English universities for research and knowledge exchange activities; developing and implementing the Research Excellence Framework in partnership with the UK Higher Education funding bodies; overseeing the sustainability of the Higher

Education research base in England; overseeing the £900 million (~HK$9.324 billion) UK Research Partnership Investment Fund; and the Higher Education Innovation Fund (HEIF).

USA

10. The USA is one of the jurisdictions with large investment in research and innovation. It maintains universities, researchers and facilities through an extensive network of federal funders, state funders, industry, foundations and university endowments. The federal government funds about 60% of university-based R&D. Academic institutions fund more than 20% of the total share of university R&D as they are increasingly using their own resources to finance research. The rest of research funding comes from industry, private foundations and state / local governments. USA researchers are now more relying on the financial support from private foundations and their own institutions. Nevertheless, the federal government is still the major funding provider to universities.

11. The National Institutes of Health (NIH), a part of the USA Department of Health and Human Services, is one of the largest public funders of biomedical research in the world, investing more than US$32 billion (~HK$250.16 billion) a year to enhance life and reduce illness and disability. There are currently 1 323 active funding opportunities available under the NIH. The main types of grant funding provided are (a) research grants, (b) resource grants, (c) programme project / center grants, (d) Trans-NIH programmes, (e) research training and fellowships and (f) career development awards.

12. For research grants, they include the following programmes:

(a) Research Programme - to support a discrete, specified and circumscribed research project for a period of three to five years with no specific funding limit;

(b) Small Grant Programme - to support a variety of types of projects like pilot or feasibility studies, collection of preliminary data, secondary analysis of existing data, small and self-contained research projects, development of new research technology, etc. for up to two years;

(c) Support for Conferences and Scientific Meetings - to support high quality conferences / scientific meetings related to NIH's scientific mission and / or public health with a project duration of up to five

years;

(d) Exploratory / Developmental Research Grant Award - to support the early stage of new, exploratory and developmental research projects, including pilot and feasibility studies with a maximum funding of US$0.275 million (~HK$2.14 million) for a period of up to two years; and

(e) Small Business Technology Transfer - to stimulate scientific and technological innovation through cooperative research / R&D carried out between small business concerns (SBCs) and research institutions (RIs) and foster technology transfer between SBCs and RIs with a funding amount ranged from US$0.15 million (~HK$1.17 million) to US$1 million (~HK$7.82 million) for a period of up to 2 years.

13. The National Science Foundation (NSF) is one of the federal agencies funding research and education in the field of science and engineering through grants and cooperative agreements with more than 2 000 colleges, universities, K-12 school systems, businesses, informal science organisations and other research organisations throughout the USA. The NSF accounts for about one-fourth of federal support to academic institutions for basic research. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Antarctic research stations. The NSF also supports cooperative research between universities and industry, USA participation in international scientific and engineering efforts, and educational activities at every academic level.

Annex G

Summary of Views Received in the Consultation Exercise

Substantial Increase in Research Funding

Recommendation 1

The Government to provide new funding to support R&D with a view to doubling the overall competitive research funding in Hong Kong from the prevailing amount of about $2 billion to $4 billion per annum by 2022, including the doubling of RGC funding from $1 billion to $2 billion over the same period.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• The recent financial injections by the government in promoting the development of innovation and technology were well received by the sector as a demonstration of government's involvement as well as commitment in this regard. • It is encouraging that the Hong Kong government has promised more funding for research in Hong Kong. • This recommendation will unquestionably strengthen the innovative and research capability of Hong Kong and truncate the gap with neighbouring countries in science and public research funding. • To ensure a healthy development of research strengths, doubling of RGC funding from $1 billion to $2 billion by 2022 is critical since almost all basic research activities depend on this source of funding. • The doubling of RGC funding is appreciated for an expanded role of the government as the prime driving force in more impactful research aimed at taking the local economy and society forward	Noted / Incorporated in the Review Report as appropriate.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
in innovations, diversity in industries and advancements in social well-being. With such a scale of increase, it is hoped that there is new "investment" to enable the UGC and the government to tread new waters in R&D, rather than a zero-sum game of taking the resources from one research sector to another, or reducing institutional research support for the provision of more competitive funds. • This is timely, and should be immediately translated into action and execution. The current level of GRF funding is low by international standard especially given that this is the most fundamental (and important) scheme that funds research across all disciplines and researchers of all levels.	Ditto
• The public sector would only be required to increase its R&D investment/expenditure by one-third instead of a doubling to achieve the target. Such target would still not be easy to meet, having regard to the requirement of a substantial injection into the REF to cover the current shortfall and to double the RGC's annual research funding within a span of five years. • GRF funding level in Hong Kong is too low if compared to that in other developed countries/ jurisdictions. The doubling of competitive research funding may still not be adequate to meet the demand. • With the increase in research funding, it is hoped that researchers would have a better chance to obtain funding for their research and the funding approved per project would also be increased. • R&D funding is a multi-faceted issue and simply increasing funding alone will not achieve the goal of creating a sustainable R&D scene.	The Task Force has suggested / pointed out the following: - additional research funding mechanisms or strategies may need to be introduced in a timely and strategic manner to ensure that adequate resources are provided to support the initiatives as proposed by the Task Force; - strategies for endowment research funding need to be credible and viable to meet the annual disbursement needs with

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
While the government's plan to raise R&D funding is very welcomed, this funding must be applied in the areas that will provide the right amount of prompting that will ignite the entire process of encouraging the private sector to increase their investment in R&D, that in near future, combined with the government funding in R&D, will take the overall number closer to 2% of GDP, which is the global average. • Simply increasing public funding in R&D will provide an improvement but will inevitably prove short-term. • This recommendation still falls short of those of our competitors in the region (which are in the range of 2 - 4%). Indeed, in a recent briefing on Guangdong-Hong Kong-Macau Greater Bay Area (GBA) Technology Innovation Strategic Plan by the Ministry of Science and Technology, one of the targets is to increase the R&D expenditure in the GBA to 2.8% and 3.5% GDP by 2020 and 2022, respectively. The Task Force might wish to recommend a larger increase in research funding in order to support Hong Kong's R&D competitiveness regionally and internationally. • The doubling of RGC funding is still not sufficient given the current levels of research activities and intensity as well as the expectations in raising academic excellence, driving for society and economic impact as well as research support of the aspirational development in the Loop and Greater Bay Area. As a reference, the current level of R&D in Singapore is SGD$19.1b (or HK$110b) over last 5 years, or $22b annually even though Singapore has a much smaller population base (but a more technologically inclined economy). The government should therefore take this	spending that is affordable and acceptable to the public, taking into account the economic environment of the times; - considering that it would also take time for the community to expand its research capacity, the allocation of new resources should be made available by phases; - high quality research with social impact is crucial to the future development of Hong Kong; and - quality research should pass threshold in both academic merit and potential research impact.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
opportunity to embark on a regular planning cycle (e.g. of a 5-year cycle), during which it should steadily step up the R&D funding from 1.5% to the level of 4 - 5% over a period of e.g. two decades. This would raise the long-term sustainability and competitiveness of Hong Kong, not just in the academic developments but the overall economic health and societal well-being. • Given the experience that there have been a large number of quality projects which were fundable but not funded, we recommend the UGC and other grantors to increase the approval rate for funding applications such that more researchers could receive funding to develop their ideas and projects. • On top of providing more research funding amount, we would also like the UGC to consider boosting successful rate of applications with an aim to encourage more researchers to apply for the fund.	Ditto
• A review of the level of GRF funding in different streams should be conducted. For example, the current level of GRF in the Social Sciences and Physical/Natural/Medical/ Engineering Sciences is generally low in supporting world-level research. Injection of new funding would raise the support of funded projects (thus driving for desirable outcomes and impact) while keeping the current level of success rates (which are already highly competitive). • The amount of funding for RGC GRF/ECS is currently too small. For the Physical Sciences Panel, funding approved is insufficient for conducting high impact research as well as for supporting RPg students.	For reference in the context of RGC Review (Phase II).

Substantial Increase in Research Funding

Recommendation 1a

To inject substantial new money into the REF to make up the shortfall due to the reduction in the annual rate of return, in order to sustain the current funding for research.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• The dwindling of the investment return rate of the REF and the recent capping of the RGC GRF at a maximum of $1.2 million limit the opportunity and extent of achievement of active researchers in Hong Kong. Taking into consideration inflation and salary hikes, the current research environment is more challenging than a decade ago. • 支持專責小組向研究基金大量注資不少於100 億元的建議，彌補投資收益下跌對研究基金的影響。 *[Translation: Support the recommendation of Task Force to inject no less than $10 billion into the REF, to make up for the shortfall due to the reduction in the annual rate of return.]* • Small- to medium-sized universities with relatively small number of RPg quotas are in need of the funding to recruit students, to create a critical mass of research talents and to build up research capability.	Noted / Incorporated in the Review Report as appropriate.
• When the RGC started in 1991, there was no cap on the funding for project although in reality huge grants were not possible. The amount awarded for a 5-scoring project could be up to $2m. Now in 2018 there is a cap of $1.2m, essentially equivalent to a fraction of the funding. By default, at that level of funding no project in B&M can be supported that needs to use current cutting-edge technologies like whole	For reference in the context of RGC Review (Phase II).

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
genome sequencing, single cell analyses, proteomics, large population genetic analyses, human stem cell work, etc. So researchers in HK are now increasingly constrained to propose "safe" small-scale unambitious projects.	Ditto
• Hope firstly that the UGC will publish a clear and specific roadmap to stipulate how this target could be achieved. In addition, we would also like to see in the roadmap, an ultimate target to increase RGC endowment by $50 billion as a means to increase competitive research funding and to catch-up with regional competitors. • The government should seriously re-consider the reliance of investment return of REF to fund research. When the investment return was weak which led to a shortfall of $370m in 2016-17, it would be detrimental to R&D as it disrupted the research momentum, and negatively affected public sentiments and global reputation of Hong Kong as an academic hub, and called into question the government commitment in R&D for a sustainable future. In this connection, the government should not use the dated approach to link research funding (which demands stability, growth and sustainability) to the fluctuating investment returns. This is in fact the international model for the vast majority of advanced economies. The capital instead should be used to fund research, not the investment return. In fact, the investment returns of the government reserve, which provides a stronger buffer, would be a better alternative source for annual R&D budget.	The Task Force has suggested / pointed out the following: - additional research funding mechanisms or strategies may need to be introduced in a timely and strategic manner to ensure that adequate resources are provided to support the initiatives as proposed by the Task Force; - strategies for endowment research funding need to be credible and viable to meet the annual disbursement needs with spending that is affordable and acceptable to the public, taking into account the economic environment of the times; and - new funding resources in the form of an injection to the REF will provide a more stable source of funding and should be welcomed by the higher education sector.

Substantial Increase in Research Funding

Recommendation 1b

To rationalise the use of different pots of REF for more effective and flexible deployment of funding resources

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• SF Institutions earnestly request that the existing provision for the sector is not affected. While the cap imposed on the SF pot can be removed, the funding earmarked for the sector should not be made transferrable to other sectors. • Will more funding lead to greater pots of money ending up in certain areas of research only? Or will a broader spectrum of research areas benefit? • The process has to be very transparent and wide consultation should be conducted for the shift of usage.	The Task Force has suggested flexibly redeploying the uncommitted funding for other pressing requirements **after** having fully met the original intentions of the different schemes, including providing sufficient research funds for self-financed institutions, theme-based research and fully covering the tuition fees of all local students of all UGC-funded research.
• Apart from the pots of funding for SF Degree sector and UGC-funded universities, flexibilities in the allocation of RGC GRF/ECS funding for different panels should also be allowed. At present, the re-allocation of funding among different panels based on past performance will only be effective in the year following. It is hard to re-allocate funding in the same financial year although funding is under-utilised in one panel while insufficient in the other. Principles, guidelines and mechanisms in deploying the funding resources should also be established.	For reference in the context of RGC Review (Phase II).

Substantial Increase in Research Funding

Recommendation 1c

To boost private R&D expenditure and donations in the research community by setting up a Research Matching Grant Scheme for local degree-awarding institutions.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• The Scheme, if implemented, would bring about more donation and involvement from the private sector, and help develop a culture of research support among local industries/ philanthropists. • With additional funding and enhanced connection with the private sector, it is expected that more employment and development opportunities would be opened up to local research talents. • Hong Kong is without an obvious driver for the development of its R&D scene; e.g. being surrounded by hostile neighbours (military and defense needs), lack of natural resources and the like. Hence, another driver has to be identified (and one that is relatable to all in Hong Kong if this driver is to be effective). Hong Kong has always been driven by wealth creation, and this wealth creation drive (and talent) can be re-directed to develop the R&D scene if it can be demonstrated that R&D creates wealth. What Hong Kong needs are "heroes"; i.e. success stories in the mould of Google, Amazon, Alibaba, Tencent, etc., that create a halo effect for companies that employ R&D to fuel their successes. Once this halo effect takes a firm hold in the Hong Kong psyche, the likelihood of companies in Hong Kong investing more in R&D will increase. In order to act as a catalyst to create heroes, perhaps the government should consider abandoning its	Noted / Incorporated in the Review Report as appropriate.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
positive non-interventionist approach and start taking some risks in supporting potential champions in the private sector. • Companies in the private sector are driven by the profit imperative and treat R&D expenditure as another project in the budgeting process. In other words, for R&D to be allocated a budget (in competition with other projects in the company, all crying out for a slice of a limited budget), it must have the potential to generate a return (ROI) that exceeds the returns expected from the competing projects. In Hong Kong, R&D typically loses out due to the uncertain results/returns, leading to a paucity of investment in R&D in the private sector. • It is noted that currently private industry only contributed 40% of Hong Kong's R&D expenditure and the target is to increase the industrial contribution from 40% to 60%. It will be important to recommend more attractive incentives to encourage industrial R&D investment, including but not limited to tax relief, matching grants, flexibility in IP ownership, etc. • Having regard to the importance of a balanced triad relationship among the higher education sector, industry and the government, it is suggested to revisit the situation in, say, five years to assess the results of collaborative initiatives and deliberate whether further reinforcement or new initiatives would need to be called for. • A balanced relationship among the different sectors is important in the course of conducting research given the dispersity of respective	Ditto

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
priorities/agenda of the industry and universities. • Upon implementation, more opportunities for research talents will be provided in the private sector under the Research Matching Grant Scheme and the talents will undoubtedly strengthen the R&D support and benefit the industry in the long run. • Tax incentive should also apply to enterprises that participate in the Matching Grant Scheme. The philanthropic culture in Hong Kong does not favour support for research as such donations are often viewed as having short-term impact only (unlike a physical structure). Hence, the recommendation of introducing a Research Matching Grant Scheme is strongly supported. • Funding should be provided by the government to encourage industrial growth in R&D to receive the workforce trained in the tertiary sector. When expansion of academic institutions is unlikely, a rapidly responding industrial sector is needed to receive a well-trained workforce for long-term growth of the research community.	Ditto
• The private sector would be more forthcoming to be engaged in collaborative research should more incentives, including but not limited to tax reduction, be introduced. The Public-Private Partnership (PPP) model adopted by the USA would serve as a good reference example in the context that the involvement of the Government would help reduce the risk concerned and pose more attraction to the private sector in becoming a partner of a research project.	The Task Force has pointed out that the Government has undertaken to provide additional tax deduction for expenditure incurred by enterprise on R&D as an inducement to private companies to increase investment in technological R&D.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• It is glad to see this new development and much hope that donations received for R&D, apart from conventional grants, will also be counted towards the institution's performance, and thus bringing in a new culture which is incentivised by a new way of measurement. In the arts and humanities, it is typical for meaningful research and knowledge transfer being supported with funds from charitable and community organisations as they prove to be of high social value and relevance. Such testimony should be of no lesser strength than, say, grants from institutes for medical research. • In addition to incentives to Industry R&D, there is a need to intensify and broaden support of Academia-Industry collaboration based at the universities. Sabbaticals for professoriates to undertake a reasonable period of entrepreneurship, industry start-ups, etc. are desirable. There should also be increased motivation for charities supporting research. Compared to the research ecosystem in the USA, UK, etc. where there is a wide range of research-funders such as the Wellcome Trust (UK), Gates Foundation (USA), Howard Hughes Institutes (USA), Hong Kong has a smaller and narrower range of non-government public research funders except the Croucher Foundation. Incentives can be introduced to enhance R&D across public, private, government, university and industry sectors. • How the UGC can ensure that matching funds are used on research and not administrative, "overheads" or other purposes beyond the control of the researchers/investigators?	For reference in the context of implementation.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• The additional resources from the Research Matching Grant Scheme should be placed under the control of the researchers/investigators as budget controllers.	Ditto
• 有關「研究配對補助金計劃」的建議，一些排名比較高的院校可能較有能力可以取得較多捐款，再加上政府的「配對資助」，有可能令他們比一些較弱勢的院校多數以倍計的資源。另一方面，一些專注商學、工程、科技等的院校可能較容易得到私營機構的支持；相反，專注文學、社會科學、教育等的院校則較難得到商界的援助。 *[Translation: Some higher-ranked institutions might be more capable to attract more donations. Together with the "Research Matching Grant" from the Government, these institutions might obtain resources a multiple of that obtained by lower-ranked institutions. In addition, institutions which focus on business, engineering, science and technology would be more likely to solicit support from the private sector, while institutions which focus on literature, social sciences and education would find it difficult to receive support from the business sector.]*	The Task Force has suggested that R&D expenditure and donations can be made for a particular university / project, irrespective of discipline, and the Government will match the donations accordingly.
• A few representatives from local universities serving the Board of the Science and Technology Park were not replaced with those from the same sector after their retirement from the Board.	Views to be passed to the relevant Government Bureau for reference.

Sustainable Strategies and Support for Research Talent

Recommendation 2

To strengthen the research staff force and to nurture / sustain the development of research talent by introducing three fellowship schemes, namely a postdoctoral fellowship scheme, a research fellow scheme and a senior research fellow scheme under the RGC.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• The proposed additional resources and support in nurturing talents / training RPgs are welcomed. • It should be noted that the SF sector is making contribution to the local research community as it is providing a growing population of postdoctoral researchers. • The proposed postdoctoral fellowship scheme is welcomed as postdoctoral researchers are always regarded as solid supporting force for local research. • The proposed number of fellowships for postdoctoral researchers, research fellows, and senior research fellows seem appropriate. • Such fellowship schemes are common in the international scenes; examples are the NRF and A*STAR fellows of Singapore, fellows of the Royal Society and various academic bodies of UK, JSPS fellows of Japan, Foundation Fellows of Australia, Humboldt and other fellows of Germany, etc. Fellowships aiming at both senior and junior levels are equally important. • The "early stage" of research talent could be defined, say, within 3 years of doctoral graduation/full-time research job.	Noted / Incorporated in the Review Report as appropriate.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• The introduction of the Postdoctoral Fellowship scheme is a welcome development. • More support for PhD students, and better leave arrangement for PIs to conduct research initiatives in the manner of field trips, archival studies, etc.	Ditto
• The number of Postdoctoral Fellowship should be increased significantly to 200 to build up our research talent pool. This number is comparable to the Hong Kong PhD Fellowship scheme which is a very successful program. • The numbers proposed seem to be too small to be able to make a real impact. • Although the figures proposed (10-15 research fellows, and up to 10 senior fellows) are low by international standard, this injection of fellowship would direct Hong Kong to the right path.	The Task Force has recommended that the number of places and the amount of stipend will be reviewed as appropriate in future subject to the number of quality applications and comments from the relevant subject expertise.
• The line "*Each awardee is suggested to be granted with a fellowship stipend for a maximum of three years with the support of a UGC-funded university*" should be further clarified. • Other than research funding, residence support should also be strengthened if global research talents are to be attracted. • The education and proper training of PG students is very important to research, because a major body of research is done by PG students.	For reference in the context of implementation.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• In order to create a sustainable talent development process, future R&D funding must be granted to new blood as time moves on. • 建議預留適當比例的名額予本地學生及學者，栽培本地的研究人材。 *[Translation: Recommend to reserve an appropriate proportion of fellowship places for local students and scholars for the sake of nurturing local research talents.]* • Not all fresh graduates are confident in devoting time for a PhD programme due to a combination of factors. These include the long duration of PG studies (4 - 5 years), meagre stipends, and limited career prospects after graduation. The situation is unfavourable for foreign-born students and postdoctoral scholars who, aside from having to pay housing and living expenses, deal with the prospects of uncertainty in future employability. In this regard, other non-financial incentives should be considered to attract RPg and postdoctoral students, such as medical insurance, easing of migration requirements for foreign students, and housing benefits, such that not only more local students will consider seriously the prospects of doing research in Hong Kong, but also more international students will consider working and living in Hong Kong, both strengthening and diversifying Hong Kong's research staff force. • Research is a career, and like any career, one can only progress (career-wise) if there are suitable jobs in the market. The creation of suitable R&D jobs in the private sector is a critical element of a sustainable R&D lifecycle.	Ditto

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• More job opportunities should be provided for local PhD graduates (academia, high-tech companies, and research-based companies), as their biggest concern is that the uncertainty is too high after graduation. Universities should employ more local graduates as their new faculty members, and there should be more opportunities in the local high-tech firms and more research-based companies in Hong Kong, perhaps a Hong Kong version of Bell Labs. • 保障輔助研究人員和研究生的工作及出路,對研究人才的培訓及香港的學術研究發展極為重要。 *[Translation: Warranting career prospects of research supporting staff and RPgs are essential to nurturing research talents and the R&D development in Hong Kong.]* • 研究生津貼不足,工作條件不受保障;輔助研究職位(初級研究助理、研究助理及高級研究助理)勞動待遇欠規範,合約期短;輔助研究事業前景不清,缺乏晉升機會。 *[Translation: Stipend for RPgs is insufficient and they have no employment protections. On research supporting posts (junior research assistant, research assistant and senior research assistant), their employment is mostly on short-term contracts without regulated employment entitlement. Research supporting staff thus have uncertain career prospects and lack advancement opportunities.]* • 要求專上院校承認院校與研究生的僱傭關係,提供與院校員工相等的待遇以確保其僱員的權益;要求專上院校為輔助研究人員訂立明確薪級表,以及資歷互認安排,確保輔助研究人員的待遇與院校員工相若;訂定資助政策,	Regarding employment prospect of RPg students, we note that different openings of teaching or research positions are offered by local tertiary institutions. Individual university / institution has full autonomy over the employment and or development opportunities of its research staff in this regard. It should however be noted that the quality of the personnel concerned should come first. On the other hand, the Innovation and Technology Bureau has set aside $500 million under the ITF to launch the "Technology Talent Scheme" to train and pool together more outstanding innovation and technology talents, as well as to encourage them to pursue a career in innovation and scientific research. One of the initiatives is to establish a "Postdoctoral Hub" to provide funding support for enterprises to recruit postdoctoral talent for scientific research

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
鼓勵院校持續僱用原有輔助研究人員，延長合約期；大幅增加兼讀制博士學額，鼓勵院校給予輔助研究人員進修機會。 *[Translation: Request tertiary institutions to recognise the employment relationship between them and their RPgs, and to provide RPgs with the same entitlement as other employees so as to ensure that their rights are protected. Request tertiary institutions to set out clear pay scales/ salary scales and arrange mutual recognition of qualifications, such that research supporting staff can be treated in comparable manner with other employees. New funding support policy should be devised to encourage institutions to employ their research supporting staff on a continuous basis with extension of contract duration. Part-time doctoral places should also be substantially increased to encourage institutions to provide their research supporting staff with opportunities to pursue further study.]* • It is believed that the matter of academic career development is of vital importance to research staff and whether research fellows will be given the opportunity to take up the position of academic staff after completing the projects. • The packages for new faculty recruitment do not contain substantial research startup funding. This has significantly affected the attractiveness of the faculty posts to highly qualified applicants around the world. The research startup funding for new recruits in our universities is only one-tenth to one-fifth of that available to newly recruited junior faculty members in most top-level Chinese universities.	and product development. We believe these initiatives will provide more employment opportunities for our RPg graduates.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• We need a good system to provide high-quality staff a bright research career in our universities. Most of our working force is supported by temporary short-term contracts with no job security, dignity or a clear path for further advancement. • The primary research workforce in the USA and other developed countries is made up of postdoctoral researchers, but in Hong Kong we rely heavily (nearly exclusively in some areas) on RPg students. The career prospects of postdoctoral researchers beyond the three years of support will also need to be carefully considered.	Ditto
• While welcoming the proposed postdoctoral fellowship scheme, research fellow scheme and senior research fellow scheme, doors may also be opened to RPg students with overseas experience (e.g. exchange fellowship).	Hong Kong PhD Fellowship Scheme (HKPFS) is open for application globally and has attracted RPg students from over 120 countries/regions.
• Hong Kong PhD Fellowship Scheme should also introduce more joint/double PhD programmes in collaboration with overseas universities.	RGC has approved including UGC-funded dual/joint PhD programmes, which have at least two years of normative study period to be in residence study in local universities, into the HKPFS.
• Increase the amount of RPg studentship. The current studentship for local RPg students is not enough to attract elite student. An elite student can easily find a job with salary much higher than studying an RPg.	Additional $3 billion has been injected into the REF to provide local RPg students with non-means-tested tuition waiver with effect from

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• The new initiatives of providing non-means-tested studentships to eligible local students enrolled in UGC-funded RPg programs are welcomed. The level of studentships between PhD degree and Master degree should vary. In addition, an extra subsidy should also be considered for local PhD students. • Development of doctoral talent is key to the future of Hong Kong and yet the current level of scholarship support is below the demands of the communities. We have many top applicants but they are unable to get into the system because of lack of scholarship funding. The current level of HKPFS is too low to cover the community needs. • The HK PhD fellowship scheme needs to be revised and updated, especially as far as the level of funding available to successful candidates, as it is no longer competitive internationally.	2018/19. RGC has approved increasing the monthly stipend and conference and research-related travel allowance for HKPFS awardees.
• There is a need to have a longer-term plan for the development of a research community in Hong Kong, that takes into consideration the size of the workforce, the number of postdocs and graduate students who will stay, research personnel, etc. This will guide the longer-term projection of the capacity build up.	Relevant statistics to be collected for continuous monitoring purposes.
• Support a substantial increase in RPg students and to remove the existing 40% over-enrolment limit for some institutions. UGC-funded universities have the capacity to double or triple the RPg numbers. It is suggested that the government encourages UGC-funded universities to receive financial support for training RPg students from other municipal	UGC to review the proposed lifting/ relaxation of over-enrolment limit.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
governments in the Mainland such as the Greater Bay Area.	Ditto
• The number of RPgs only accounts for one-tenth of the total student number. Some other universities have even less RPgs. For universities in Hong Kong to reach the next level of research excellence, the number of RPgs should be substantially increased. This requires stronger support from the UGC, under the long-term vision for the government to deepen and widen our talent-base. • The RPg student quota should also be significantly increased to an average of at least three RPg students per academic staff member (Chair Professor, Professor, Associate Professor or Assistant Professor) in UGC-funded universities. The increased quota of RPg students should be distributed on a more even basis among local universities so that all types of research in all universities can benefit. In the UK, each university is provided with a certain number of scholarships (e.g. 50 places), which the university will use to globally recruit the best possible students. Hong Kong should make reference to this.	UGC to review the 40% over-enrolment limit of RPg places.

Support for Research Infrastructure

Recommendation 3

RGC's Review (Phase II) to include technical aspects such as time / commitment of Principal Investigators, quality of assessment, monitoring processes and project renewal.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• The HK research community will benefit if a new type of application similar to the USA R21 exploratory grant award is introduced. • Modelling on the USA R21 exploratory grant award, the new grant format can be funded in a shorter term (1 - 2 year max.), smaller fixed sum (HK$150k - 250k/year), shorter application supporting documents without requirement of preliminary results (2 - 3 pages), 2 to 3 rounds of application per year, and if the research is successful may add 0.25 - 0.5 score to a future full RGC grant application (or other innovation grant mechanisms). • For SF institutions to be more involved and contribute in the research arena, their following perceptions would need to be addressed: (i) lack of research infrastructure; (ii) inadequate duration and limited funding for research projects; and (iii) sub-degree teaching staff are not eligible to apply for research funding. • Difficulties in identifying new space/land for the purpose would need to be resolved. • It will be helpful to revise the research funding policy to encourage high quality innovative research projects (which will be funded at an adequate level for a longer term) rather than focusing on short-term "piecemeal" projects	For reference in the context of RGC Review (Phase II).

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
competing for resources for academic staff substantiation purposes. • RGC to consider double-blinded reviews in the assessment of competitive grants, and to provide greater transparency in the assessment process. • The peer review process can be streamlined. For large grants in the range of tens of millions of dollars, more elaborate screening and vetting should be in place. The focus should be more on the governance and direction, not detailed experiments. No large grant would ensure every detail to be mapped out years in advance. For individual PI grants, we should encourage rapid turnaround vetting and reduce the administrative costs to a minimum. This applies to RGC administrators, PIs, and reviewers. One may consider the type of funding of Gates Foundation, where short proposals of 1 - 2 pages are sufficient. By eliminating an elaborate reviewing process, a small committee can evaluate the proposals more effectively within a short period of time. This will indeed be the model many funding agencies are aiming to move towards to reduce administrative costs. Studies also show that this model encourages more exploratory research, allows rapid changes to fit technology development, and allows re-orientation of research focus. Studies show that this approach allows cultivation and development of more innovative and creative research with bigger impact both in number and quality. • Research may take at least 3 - 5 years to produce its impact and results. It is recommended that additional funding be made available for application by individual	Ditto

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
researchers who demonstrate good potential as stated in their progress reports. • As practised by most elite funding agencies in the world, potential GRF researchers should be allowed to defend their proposals at interview. • RAE does not take into account the different roles of individual UGC-funded universities and the unequal distribution of research resources, such as the RPg student places. Despite the inclusion of impact factor in RAE 2020, the current format of RAE still puts significant emphasis on traditional research output, i.e. research publications. In view of the emphasis on innovation and entrepreneurship by the Chinese and Hong Kong governments, we consider it necessary to reform the format of future RAEs in order to take into consideration role differentiation of UGC-funded universities, and the economic and societal needs of Hong Kong and the Mainland. • Many tangible and intangible factors such as access to specialised equipment and professional services (e.g., managing scientific societies and journals) can affect technical aspects including time/commitment of PIs, quality of assessment, mentoring processes and project renewal, but these are difficult to assess. Over reporting will create excessive administrative burden and loss of productive man hours. • The technical aspects (as mentioned above) sound process-oriented and they do not directly indicate the final outcome or quality of the projects. Putting a heavy emphasis on these process indicators may distort the incentives of	Ditto

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
the investigators, who may then focus on meeting these targets instead of the bigger picture (of driving quality of all research projects under their administration). • The trust between funding agencies and the research community can be enhanced and accountability sustained through a more streamlined and transparent approach to assessment, monitoring and renewal. • To allow PIs more time to focus on one project instead of having to switch research direction frequently, it is recommended that the amount of support provided for a single project should double the current level, and the project period should be extended to four or five years. • Invitations for GRF applications should be made at least twice per year in order to provide better support for researchers. Upon successful application, a one-year break should be implemented. This will give a PI more time to focus on their project instead of having to switch research direction frequently, and will provide a greater chance for other researchers to obtain funding support. And the NSFC's practice of setting a maximum time limit (for example three years) for on-going project(s), is worth following. • The requirement to provide project information covering the past five years should be removed. For an active researcher, the total number of projects (including pending, on-going, completed and unfunded) in the past five year may be well above 10. For a group project like CRF, the total number of projects for the whole group may be over 100. It is suggested that RGC should replace this requirement with a simple declaration by all	Ditto

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
the applicants about similar projects they have conducted in the past five years. • In the project report, a paper submitted after proposal submission should be counted, instead of counting only those after the project has started. Usually, a PI already has some preliminary findings before writing a proposal. Therefore, once a proposal has been submitted, they can start submitting papers. After a project has started, it takes time to recruit students before research can start. It then takes two years before the papers can be written. Basically, there is no time to publish a paper within three years. • Students trained, with support from UGC, and involved in the relevant GRF project should be counted, even though their stipends are not directly financially supported by the GRF project.	Ditto
• It is suggested that UGC invests directly with one-off funding to accelerate the construction of buildings for R&D in each campus now under the Capital Programme. It is suggested to follow the same arrangement for the new Hostel Development Fund, which will greatly release the pressure on space needs and help boost R&D activities.	For reference / consideration in other contexts.
• Other than reviewing the research funding mechanism, a review on the Teaching part in the UGC block grant is also desirable. The review should take into consideration new research-related factors including intakes of RPg students.	UGC has embarked on a review of the Planning Exercise.
• RGC overseas and local Panel Members should both be offered comparable packages of honoraria, travel assistance, stipends, etc.	Noted.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• In view of the fact that the teaching load of colleagues are too heavy, more support for supporting staff and workload reduction are expected, if research outcomes are encouraged.	Individual university / institution will continue to exercise full autonomy in this regard.
• At present, there is uneven distribution of local expertise on RGC subject panels, e.g. Business Panel and Biology & Medicine Panel. • A more balanced representation and impartiality of RGC Council should be enhanced.	For reference upon review of membership / appointment.
• The seniority of RGC grant applicants should be considered when reviewing their applications. With equal scores, the proposals submitted by junior applicants (e.g., Assistant Professor, or professor who is not on tenure terms) should be given higher priority.	There is already a separate track for junior researchers / academics at early career stage.

Support for Research Infrastructure

Recommendation 4

The UGC to conduct a comprehensive and holistic review on the R-portion including the issue of "on-costs" (indirect cost).

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• As the RAE assesses research performance of universities in a 6-year working cycle, the results in each exercise may not reflect accurately the updated progress a university has made in research. • 同意專責小組的建議，全面檢討研究用途撥款的資助機制，包括「附加行政費用」的事宜，以確保撥款足夠資助學者的研究工作。在增加研究撥款的同時，必需要確保教學工作不會受到負面影響。例如新增的研究有可能用作招聘更多人手，但部分大學的辦公空間現時已經捉襟見肘，由多位教員共用一間辦公室的情況並不罕見。這樣會令教員欠缺空間與學生作出深入的討論及輔導，對教學工作做成負面影響。期望教資會及大學善用資源，避免增撥研究資源而縮減教員的辦公空間。 *[Translation: Agree with the Task Force's recommendation to holistically review the funding allocation mechanism, including the issue of "on-costs" so as to ensure there is sufficient funding to support research. In tandem with increasing the research funding, it is imperative to ensure that teaching would not be affected. For instance, with additional research funding more research manpower may be engaged, while given the scarce office space available, it is not uncommon for some universities that teaching staff members need to share an office room. This will in turn affect teaching as there will be inadequate space for teaching staff to conduct in-depth discussion or*	For reference in the context of the R-portion review.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
counselling with students. It is hoped that the UGC and universities will make the very best and balanced use of available resources, such that office space and other resources for teaching staff will not be curtailed at the expense of increasing research resources.] • Not certain about the unquestioned benefits of competition. More competition does not necessarily result in high quality performance. The current competitive element of the R-portion allocation has resulted in considerable negative impact on morale, stability and sustainability. • Currently the research funding is double-taxed: both RAE and annual research performance impact on the funding amount. Longer-term planning is beneficial for universities to advance their research strategies and build up their capacity. Universities need a stable environment to achieve this purpose. Therefore the double triennium assessment of the RAE is more favorable than the funding provision according to annual performance assessment which would destabilise the environment. • A reasonably high level of R-portion funding should be granted independently of institutions' success in competitive grants. To foster a positive culture through competition, funding related to success in competitive grants should be "bonuses", rather than the current practice that penalises failure in securing such grants. • On-costs payments related to grants should be fully accountable and universities should not have absolute liberty to utilise these funds for	Ditto

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
non-research related purposes. At the moment how such payments are utilised vary greatly amongst departments and institutions, and often the PIs themselves have little say over their utilisation. • Inter-institutional competition has reinforced research-driven personnel policies at the institutional level. All have led to greater insecurity for academics, casualisation of teaching and research jobs, result-oriented short-termism, a "risk-adverse" research culture unfavourable to innovative and creative research, and without doubt has compromised teaching and learning. • The inclusion of ITF grant success rates as part of the calculation of the R-portion of the block grant is supported. • Calculation of the competitive part of the R-portion should not include non-UGC/RGC grants, such as ITF and HMRF, since this would be skewed towards certain large-scale universities that provide these disciplines. To reiterate, the R-portion should ensure that the research environments of individual universities are stable for attracting and retaining quality staff to advance the universities' research agenda for the benefit of the local community and the humankind. Competitive bids for research grants should have served the purpose of quality assurance and further competitive allocation leading to yearly funding fluctuation would destablise the environment. • Doubling the R-portion is suggested. This will increase the budget for peer-reviewed ERG grants allocated through RGC. The small ERG	Ditto

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
budget has resulted in more projects being funded at much reduced grant value over the past decade. The grant value per project needs to be increased significantly to take into account inflation and to ensure viability of the projects. • As more research funding is in the pipeline, there should be more resources to facilitate a review of the formula used in calculating the contributions of grant success in allocating the research portion (R-portion) to a university/institution. Now the formula takes in a heavy weighting of the amounts of grants, instead of the number of grants obtained. This disadvantages universities of a smaller size and particularly disciplines in the humanities and social sciences. As each funded project in any disciplines should have been the result of a competitive and rigorous process, it should be the number of projects, instead of the amounts of the projects, that accounts for a heavier weighting in calculating the R-portion of the block grant. • The calculation of R-portion has not taken into full consideration the importance of role differentiation between universities. On one hand, top universities have not received additional support. It is a common practice to give top universities stronger and additional support in mainland China, Taiwan, Korea and many other Asian countries. On the other hand, universities that are strong in translational and applied research are not sufficiently recognised in the calculation of the R-portion. • About 50% of our professoriate staff rarely get external research grants. However, many of these tenured staff are still active and competent	Ditto

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
in research. There is also a need for research if they want to be excellent educators. They deserve a certain level of research support. As long as a fair mechanism for research funding allocation is in place in our universities, increasing the amount of research funding in the R-portion will help this group of people. This will significantly improve both the quality and the quantity of research in our higher education sector. • To deliver value for the R&D communities in Hong Kong, there should be cutting-edge and disruptive technologies, for instance, state-of-the- art equipment from advanced microscopy to spectroscopy to clean rooms to device fabrication to advanced imaging to automated systems and synthetic capabilities etc. In this regard, stronger public funding, including on-cost budget, should be channeled to support not just the establishment of these equipment and system, but maintaining and renewing them so that they can continue UGC/ RGC should consider allocate a special pot of fund to support this purpose. • Agree with the inclusion of other government funding schemes, such as the ITF & HMRF, in the calculation of the R-portion, such that the overall research grant performance of institutions can be fully and more accurately reflected. As is well-known, many regions and countries have been placing a focus on impactful research.	Ditto

Support for Research Infrastructure

<u>Recommendation 5</u>

To incentivise cross-institutional / cross-disciplinary collaborations by providing sustainable support.

The UGC to rationalise and / or review the existing three funding schemes under the RGC targeted for research with substantial impact, i.e. CRF, TRS and AoE, and consider the possible combination of them to form a new scheme to, in addition to catering for the existing and future needs, support proposals from research institutes set up by universities as well as research incentives of strategic priorities.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• USA model on joint research collaboration (including public-private) upholding sharing of expertise and intellectual property can serve as a good reference. • RGC should preferably have more joint research grant schemes with the National Natural Science Foundation of China (NFSC). • It is increasingly recognised that interdisciplinary research plays an important role in the development of successful innovative projects. New mechanism and additional funding besides the AoE, CRF and TRS should be considered to promote effective and efficient inter-institutional/inter-disciplinary collaboration. • AoE branding may be desirable for some areas of collaborative research but not necessary for all. For instance, by making available different budget lines, well-established AoEs as well as small but innovative research partnerships between colleagues from different institutions could all be catered for.	Noted / Incorporated in the Review Report as appropriate.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• The establishment of research institutes formed between universities to enable the undertaking of large, joint research activities is supported. Current funding mechanisms in Hong Kong cannot cater for long term development of research topics that are of strategic and regional importance. • There is an enormous challenge associated with conducting truly interdisciplinary research, which is essential for being able to cope with the health, societal and economic challenges that are associated with rapidly increasing urbanisation, globalisation, etc. • An inclusive and collaborative funding scheme that cuts across all disciplines (instead of narrowing focusing on specific STEM areas) is welcoming. This principle should apply not just to fundamental schemes like GRF but also strategic schemes like AoE and TRS. Many emerging areas require infusion of expertise and knowledge from a broad range of intellectual disciplines from medicine to humanities, science to education, and engineering to business, etc. • Funding for research institutes is welcoming to provide the opportunity for the much needed reviving of the infrastructure in the academic system. This top-level infrastructure is paramount to strategic interdisciplinary developments for important scientific questions. Ample examples are found in international systems like USA, UK, Germany, Singapore, Korea, etc. Similar to ITF funding which led to the establishment of NAMI and Research Institute of Textiles and Apparel, strategic investments could be made in establishing institutes hosted by universities in areas relevant	Ditto

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
to Hong Kong, such as ageing, urban ecology, clean water, intelligent materials, data-driven designs, etc. Unlike Institutes established through ITC funding, the interdisciplinary institutes should not be limited to applied research only, but the research directions should be selected on the basis of broad societal impact and long-term intellectual growth of our society. UGC could also provide major funding to support world class research centres (e.g. Max Plank Institutes and Experts), and Hong Kong Research Chairs (similar to Canadian Research Chairs), NRF fellows of Singapore, ARC fellows of Australia, etc. which would serve to build global reputation in importations areas.	Ditto
• In addition to initiating collaboration with individual overseas university/institution, Hong Kong can be more proactive via subscribing to the Human Frontier Science Program. By contributing a certain sum of membership fee to the Program, local universities/institutions would be open to a world of opportunities of being teamed up for research collaboration with overseas jurisdictions.	Hong Kong has already joined Horizon 2020, the European Union Framework Program, as a pilot initiative since 2016.
• Currently there is not much collaboration between UGC-funded universities and SF degree-awarding institutions. To encourage collaboration between the two, consideration should be given to: (i) lifting the restriction for SF institutions to apply for joint research schemes (e.g. TRS); (ii) relaxing funding limit imposed on IDS for SF institutions; (iii) ensuring PIs/CoIs from UGC-funded universities and SF degree-awarding institutions are given fair division of credits	For reference in the context of implementation.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
(and time commitment); and (iv) relaxing duration of funding.	Ditto
• Technical difficulties are anticipated as the 3 schemes have their own application approach, assessment stringency and funding source (e.g. AoE is funded by the UGC Central Allocation Vote, unlike CRF and TRS are supported by ERG under the aegis of RGC).	The technical difficulties will need to be sorted out and addressed, while a holistic review of the 3 schemes, together with other joint research funds, will enable the UGC and RGC to formulate feasible mechanism enabling, as and when required, the removal of the boundary demarcating different pots of research money and allowing free flow of unexpended funding among different pots. The proposal is aimed to increase funding flexibility.
• The existing three funding schemes that encourage cross-institutional/cross-disciplinary collaborations (CRF, AoE, and IRS) have been set up with distinct goals. If these schemes are combined into a single one, then the initial objectives will be lost whilst the new scheme will have a very broad objective.	The Task Force has pointed out that in the course of the review, it is important that the distinct characteristics of the three schemes are well taken into account and preserved such that the existing needs will be duly catered for, and the needs of the research community currently funded by the three schemes will not be undermined.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• Co-Is should be given due credit by the UGC in order for their home institutions to recognise their contribution. If such incentives are not adequately provided for, it is doubtful whether such collaborations will be attractive enough for the Co-Is to be sustainable.	For reference in the context of the RGC Review (Phase II).

Coordination Among Different Research Funding Bodies

Recommendation 6

As a start, to strengthen and enhance the coordination among different funding bodies via the setting up of an internal government liaison group to regularly share their research directions and coordinate among them issues of common interests on research.

To consider, in the long run, setting up an overarching research steering council to formulate long-term strategic plan on research and policy on funding; to standardise the operating procedures of various funding bodies to enhance efficiency and effectiveness; and to better integrate research into the innovation ecosystem. To cater for different modes of research among disciplines, consideration should be given for the council to be organised into streams by major discipline and should vertically integrate basic, translational and applied research to ensure a holistic approach to research funding policy.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
Government Liaison Group • More communication between the funding agencies for better mutual understanding of their respective assessment stringencies and criteria would be a pre-requisite before working out any alignment. • Co-ordination of funding bodies and diversification of the funding sources is a good start. Overlap of application deadlines should be avoided to allow researchers ample time to prepare their submissions. It is suggested to have multiple rounds of applications. It is important particularly for blue sky research that requires a small amount of funding at a higher frequency, in contrast to proposals that demand tens of millions of dollars. • The academics community would welcome better communication and direct contacts with relevant funding bodies, also as a means to	Noted / Incorporated in the Review Report as appropriate.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
minimise administrative overload. • The proposed internal government liaison group may be too close to the government and therefore is likely to priortise certain areas of research at the expense of others.	The liaison group is proposed to serve as a platform for funding bodies to share their research directions and coordinate among themselves on issues of common concern.
<u>Overarching research steering council</u> • The proposal of setting up a central single entity to oversee research funding policy, i.e. coordination by the overarching research steering council, may seem too ambitious. • There is also concern that the overarching entity will be dictating over the research ecosystem. • The composition and powers of the proposed research steering council are critical – a balanced and forward-looking membership can result in a vibrant and innovative research agenda; membership that is conservative and lopsided could result in research directions that not in touch with "the real world". • The recommendation is lauded for explicitly stating for the council to explore standardising the operation procedures of the various funding bodies, as well as to be organised into subject-based streams that would accommodate for the different funding strategies, objectives, and peer review processes. • It is suggested that the leadership of the research steering council constitute of representatives from the private sector as well. Involving the	For reference in the context of setting up of an overarching entity in the long run.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
private sector and philanthropists as key stakeholders in determining the research direction of Hong Kong acts as an incentive for them to feel included in the growth of the R&D sector in Hong Kong. The insight of representatives from industry is also valuable as they are better informed of the commercialisation potential of research output. • The setup of an overarching research steering council for the purpose of strengthening the coordination among different funding bodies should be carefully considered. This may result in biased emphasis on applied research because societal impact is most readily appreciated for projects with immediate applications. • The recommendation of setting up an overarching research steering council is welcomed. However, there is concern with the proposed single system vis-a-vis the current multifaceted system that a singular system may constrain the diverse foci and orientations of research endeavors. It is said that the research steering council should better integrate research into the innovation system. And the council should consider as equal importance both the humanistic and technological advancement (the intangible and tangible impacts). • It is important that the initiative is also on funding plans and strategies geared towards the specific research environment and development needs of the disciplines. For instance, the unique social and cultural values in research of arts, humanities and business should be different from the other sectors, and would best be mapped out by experts in the field and for the	Ditto

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
achievements aimed at. An overarching research council, such as the Arts and Humanities Research Council of the UK, is called for in the long run to enable more focused discussion and decisions, especially when there is the good intention for vertical integration of basic, translational and applied research; and to seek significant improvement in the present fragmented measurements of institutions where research and impact are evaluated separately, or the impact is in reality far less rewarded than the basic research and academic publications.	Ditto

Coordination Among Different Research Funding Bodies

Recommendation 7

To adopt a common researcher identity, e.g. the Open Research Contributor ID (ORCID), for grants applications.

In the long run, to set up a central database on research to serve as a depository of information on researchers, reviewers, projects, application and grants records for the benefit of the funding bodies and researchers.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• ORCID may be considered as a good platform for looking for research partners for collaborative projects. • Adopting a common researcher identity and setting up a central database on research will facilitate the handling of grant applications by the various funding bodies.	Noted / Incorporated in the Review Report as appropriate.
• RGC may consider providing a system/database which would help SF institutions administer their research projects. • Set up of a mandatory ORCID registration requires more than just registration administration but a host of supporting and administrative services so that the ORCID system is functional and reliable. For example, capture of earlier outputs, which could be important as they could be underpinnings of impact cases, must be done thoroughly, comprehensively and properly. Duplications must be checked and removed. Missing items are not uncommon in the current ORCID system due to a range of system or human errors. Such checking is laborious and cost intensive. UGC should be fully aware of the manpower and cost involved, and the universities should have clearer guidelines on sharing of such cost	For reference in the context of implementation.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
and manpower. • ORCID iD is commonly used in the scientific literature as captured by leading databases such as SCOPUS and WoS. Consideration should also be made for the less known grey literature which can be equally important in some areas such as Education.	Ditto
• While there is intuitive appeal of such a database, the UGC needs to be specific about what kinds of information are collected and to what purpose. At the moment it is unclear what this is for and who will have access to such information. • The rationale behind a central database is not clear as there has been no problem with the current practices at all. This issue may be revisited when proper legislative frameworks for freedom of information and archives, respectively, will be in place. In the meantime, we see no urgency at all to establish a central database.	The Task Force has pointed out that the creation of a common database on researchers will facilitate the peer review process, and also serve to promote successful researches undertaken by individual researchers.
• UGC should fully explore the scenarios or implications on the unauthorised or illegal use of ORCID iDs, and share with the community its findings and conclusions.	The Privacy Commissioner for Personal Data has advised that the data users (such as UGC-funded universities, UGC, ORCID Inc. or as the case may be) should comply with Data Protection Principles in Schedule 1 to the Personal Data (Privacy) Ordinance.

Key Points Made by Respondents	Task Force's Suggested Responses/Actions/Remarks
• UGC should be aware of the legal responsibilities of ORCID adoption. The current rule is for individuals who register for ORCID to take all legal responsibilities. However, if this becomes a HK-wide or UGC-wide mandatory requirement, UGC would have to take on all legal responsibilities and consider other implications.	According to the legal advice obtained, there is an indemnity clause in the contract agreement between ORCID and individuals registering for it, as UGC is not a party to the contract agreement concerned, there are no legal implications on UGC.

Guiding Principles	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• The guiding principles and recommendations described in the Interim Report are generally encouraging and positive.	Noted
On Guiding Principle I ***High Quality Research with Social Impact***	
• The recent trend of focusing on social impact is a good direction. • The emphasis of both tangible and intangible benefits of research outcomes as stated is appreciated.	Noted / Incorporated in the Review Report as appropriate.
• The sector would like to know how a social impact is defined. It is noted that the Australian model is placing emphasis on economic impact. • The initial proposed framework for the RAE 2020 drafted on May 2017 allocated a weighting of 20% to "Impact" as an element of assessment, which is in accordance with the respective weighting allocation in the first UK REF in 2014. However, this weighting was decreased in the established framework(s) from October 2017 onwards to account for comments by the universities during the consultation. It is believed that the weighting of "Impact" should not have been decreased, and that this being the first time "Impact" has been included as an element of assessment should not deter the UGC from insisting on the 20% weighting. To make sure that research done in Hong Kong is always with socioeconomic benefits in mind, the UGC should enforce the significance of "Impact" through the upcoming RAE 2020. • The details that define social impact and	It has been spelled out in the Interim Report and the Review Report that the term "social impact" should be broadly defined to include both tangible and intangible benefits of research outcomes and the specialty of each discipline should be taken into account. Quality research should therefore pass threshold in both academic merit and potential research impact. In this connection, impact should be defined as the demonstrable contributions, beneficial effects, valuable changes or advantages that research qualitatively

Guiding Principles	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
relevance are important. Without a clear illustration or examples, impact factor remain as an easy metric. As a result, many individuals (PI and reviewers alike) will still turn to impact factors as their key hidden criterion, which will defeat the purpose of using social impact as a criterion. • Besides commercial applications and economic benefits, the importance of societal and cultural impact is increasing being recognised. However, in the Interim Report, there seems to be a strong emphasis on promoting Science and Technology Innovation but not much emphasis on supporting Social Innovation and Social enterprises to maximise societal impact. • A balanced allocation of funding among different disciplines is strongly recommended, as currently a bigger portion of funding has been allocated to science under the AoE Scheme and TRS categories. Part of the funding should also be set aside to address the specific needs of Hong Kong society. We recommend that such emphasis should be explicitly built into the recommendation(s). • Provision of support to art and design research, particularly practice-led design research, which is an emerging trend and focus internationally, is very limited and its importance overlooked. Currently, GRF (Humanities and Social Science Panel) is the only funding scheme available for the art and design disciplines, and the success rate for art and design research to obtain funding support is very low. While CreateHK under ITF is intended for the creative industries, it is not a scheme for researchers in art and design. As such, we urge that research funding for art and	brings to the economy, society, culture, public policy or services, health, the environment or quality of life.

Guiding Principles	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
design research should also be increased.	
• The impact of research is not always measurable nor immediately apparent. Some research may have an immediate impact on society while others may take years to be realized. It makes more sense to revise the guiding principle from "Quality research should therefore pass threshold in both academic merit and potential research impact" to "Quality research should therefore pass threshold in either academic merit or potential research impact".	"Potential" carries the meaning that it does not require immediate quantification, so long as one can explain its impact envisaged.
On Guiding Principle II ***Adequate Support for Funded Research***	
• In reality, PIs are advised to follow the original proposals without deviation. It would be important to allow PIs to have some flexibility in altering the scope of project and deliverables based on the actual development. Substantially increasing the size of GRF grants and streamlining the report of projects should be put at the top of RGC's priority list. It is crucially important that as a result of the doubling, substantial amount of new money would be injected into GRF, on top of other trial schemes such as RIF. Funding RIF and other schemes that emphasise on translational or applied research is important but NOT at the expense of promoting high-quality fundamental research in Hong Kong. In this regard, the Guiding Principle II of "Adequate Support for Funded Research" should be followed.	Noted / Incorporated in the Review Report as appropriate.

Guiding Principles	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
On Guiding Principle III ***Balance among Basic, Translational and Applied Research*** • There is a need to support and facilitate interested academic staff to engage in academic-industry collaboration in order to foster translational development and knowledge transfer. • It is noted that research undertaken in Hong Kong is mainly on basic type. For Hong Kong to benefit from research, it is desirable for local universities and the research community to focus more on translational and applied research. • The definition of "balance" of basic, translational and applied research is relative and ambiguous. Will it be defined by the funding sources, GRF, CRF, ITF, etc. to determine what proportion each would have? We are looking forward to seeing a clear strategy on how the emphasis would be proportioned. The general understanding is that a larger foundation (basic, exploratory, blue sky research) is needed to support more individual PI-directed research. Lopsided distribution focusing on big and group projects led by key players would suffocate research in the long term. A good indicator ratio of funding from whatever source will provide a clear message of this strategy. • Many senior government officials and some leaders in the higher education sector have requested or proposed the injection of big money into translational and applied research, which will be dangerous if this is done at the cost of compromising basic research. Equal emphasis and careful balance is needed. Hong	Noted / Incorporated in the Review Report as appropriate.

Guiding Principles	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
Kong still has notable strengths in certain areas of basic research. This is our competitive edge and which we must maintain and enhance. Compared to Shenzhen and other places, Hong Kong does not have an edge in many areas of translational and applied research. However, we do have an edge in some areas of important basic research. Developing the holistic value connecting basic to applied through translational research is hence the key. Diluting our basic research would weaken our innovation base.	Ditto
On Guiding Principle VIII ***Diversified Funding Sources to Include Private, Industrial and Philanthropic Support*** • Hong Kong business should be incentivised to fund basic research in universities, not just in things that are very close to market.	Ditto

Humanities and Social Sciences Disciplines	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• There should be equitable funding across the different sub-panels with the Humanities and Social Sciences Panel of RGC. It is believed that the success rate across these sub-panels should be 25%.	Quality is the key. Comment would be forwarded to the RGC.
• Societal and cultural impact has also been identified as important and meaningful parameters to assess the impact of university research for the good of society. There needs to be a corresponding adjustment in policy to take into account of societal impact in addition to academic outputs in the appraisal of	Individual university / institution will continue to exercise full autonomy in this regard.

Humanities and Social Sciences Disciplines	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
academic staff performance. • 在 2018/19 年的優配研究金計劃下，人文學及社會科學申請撥款的成功率只有 26.7%，但自然科學的成功率卻達 51.8%，差異極大。促請教資會要確保不同範疇的研究也可以得到充足的機會得到資助。 *[Translation: The success rate of Humanities and Social Sciences discipline under the 2018/19 GRF grant application is only 26.7% whereas the success rate of Physical Sciences discipline scores 51.8%. Concerns arise from the disparity and the UGC is urged to ensure that each respective research discipline is given adequate funding opportunity.]* • Much of the focus in the Interim Report is on Engineering and Sciences, but not enough on Humanities and Social Sciences. R&D references in the report were mostly made with Business and industries in mind. Expect the Task Force to have a similarly clear position on how Humanities and Social Sciences research could be strengthened and better supported. • We notice the relatively sparse reference made to Humanities and Social Sciences research and are concerned about the UGC's stance in this regard. Readers of the Interim Report cannot help but feel that Humanities and Social Sciences are an "afterthought" in the recommendations. • There is concern that the funding in Humanities is neglected or inadequate. Generally speaking, projects related to Humanities may request smaller amounts of research fund compared to other disciplines	Comment would be forwarded to the RGC. It should also be noted that one of the recommendations is to review the funding practices / priorities via rationalising the use of different pots of REF for more effective and flexible deployment of funding resources.

Humanities and Social Sciences Disciplines	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
such as physical science, medicine. We wonder how the RGC / Government would ensure that the additional funding can benefit research projects in the domain of Humanities. • There is limited thought by the Task Force for the Humanities and Social Sciences. A one-size-fit-all approach would not do justice to those fields of study and there is a strong case for the Task Force to consider better measures to promote quality, innovative research with social impacts on Hong Kong and its residents. • 《中期諮詢報告》中大部分建議以科技研究為主，對人文及社會科學關注不足。而報告中有關科研的討論似乎偏向商業和業界用途。我們認為專責小組應該就如何加強支持人文及社會科學研究提出同樣清晰的承諾，避免日後出現重彼輕此的局面。 *[Translation: Most of the recommendations made in the Interim Report focus on Science and Technology research, and pay insufficient attention to Humanities and Social Sciences. Further, it is noted that in the Interim Report discussions made on R&D are inclined to commercial and industrial applications. The Task Force is expected to set out clear commitments on how Humanities and Social Sciences research could be strengthened and better supported to avoid an imbalance favouring Science and Technology in future.]* • It would be hardly convincing if one is told that there is little room to allow the wider scope of research in both the arts and humanities, and the science and engineering, to flourish concurrently in order for Hong Kong to live up to be a metropolitan in the	Ditto

Humanities and Social Sciences Disciplines	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
various aspects of knowledge and culture. It was heard there had been quality research meeting very high standards in the arts and humanities over the years achieved by researchers in Hong Kong. The academia and the public would probably not want to see some quality research being forgone due to research funding not increased for both the arts and sciences, while in fact the overall funding has been substantially boosted. Also, the two lines of stable and competitive funding should not be exclusive to each other, but in a healthy balance like the "dual support system" in the UK. • Greater attention could be paid to scholarship in the humanities. At a time in which Hong Kong is struggling to adjust and reconfigure its economic, political, and cultural position relative to mainland China, the academic freedoms available in Hong Kong, and the particular nature of humanities-focused scholarship, which help us to understand others through the study of histories, cultures, and languages, are a critical and valuable asset to the city. Humanities also contribute to the study of the ethics and morals that define us as a society - attributes worth further academic study and the government's attention in Hong Kong today. Critical thinking skills are hallmarks of humanities-based research and teaching, and worthy of the government's support and the public's attention. • There has been little research regarding the state of the humanities in Hong Kong today, in particular, what humanities majors do in Hong Kong, and their contributions to the city's economy, to its political formation, and to society in general.	Ditto

Humanities and Social Sciences Disciplines	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• Support for both streams - STEM and Humanities/Social Sciences/Business is equally important. Future developments of our economy and society especially in the area of healthy aging, smart city, social mobility and harmony, artificial intelligence and big data, digital education and humanities as well as the likes of neuro-cognitive developments are areas that encompass a range of diverse talents, some of which are interdisciplinary.	Ditto
• Without the need for costly items such as equipment and laboratory expenses, the funding for research in the humanities and social sciences naturally requires less than their counterparts in science and technology. When this situation translates into a reduced block grant, which is the basic but not marginal resource of a university, it becomes a value judgement on those disciplines. It has to be recognised that advancements in those disciplines as well as others are all pivotal to the balanced development of society.	For reference in the context of the R-Portion Review.

Chinese Medicine Discipline	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• 現有教資會之中醫類研究批核，與業界意見存在明顯的落差。教資會傾向按西醫式研究對還原論為主導之研究作出資助及評核，例如基礎份子研究或西醫式「病-藥相對」臨床研究。但對中醫自身體系的研究缺乏資助及肯定，例如中醫經典、理論、文獻及道地藥材應用研究；亦不要求「中醫臨床研究」需要符合中醫辨證施治之方法。	Chinese clinical (medical) research and herbal medicine research are two different but related fields of studies. Also, they are philosophy and science, and, a mixture of both.

Chinese Medicine Discipline	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
[Translation: There is discrepancy between the research assessment approach of the UGC and the views from local Chinese Medicine industry. The UGC's assessment and funding has an inclination to Chinese Medicine research adopting reductionism-based approach from the Western Medicine tradition, for example, basic molecular research or "disease-medication-corresponding" clinical research. On the other hand, there is inadequate funding support to and recognition of research on Chinese Medicine system, including its literature, theory and application of local medicinal herbs. It does not require the compliance of clinical research in Chinese Medicine to the dialectic treatment methodology of Chinese Medicine tradition.] • 現有受資助的中醫類研究未符中醫方法學。現有中醫類目之研究僅以符合還原論者多，符合整理體及中醫理論者極少，在主要研究方法中，中醫類目研究偏向不合中醫方法之研究。從過去二十年中醫納入正規高等教育後，教資會之中醫類目之研究絕大部份均為「新藥開發」或「份子研究」。按中醫方法對典籍作出考據及應用、中醫理論體系的跨學科研究及道地藥材的應用研究這三種研究進路，受中醫認可而教資會並未曾有立項支持，也未受評核認同。現有教資會之資助及評核極不利中醫研究而且對業界和市民的相關性不足，只支持「研究中醫」（按生物醫學方法學對中醫作出分析），而未有支持「中醫研究」（以符合中醫自身方法學及體系之方法作研究）。教資會有必要支持及肯定如國家 973 計劃或國家社科基金資助之中醫研究。 *[Translation: The currently funded research in*	Comment would be forwarded to the RGC, and for reference in the context of RAE.

Chinese Medicine Discipline	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
Chinese Medicine is mostly reductionism-based, and does not comply with the methodology and theory framework of Chinese Medicine tradition. Since its incorporation into formal tertiary education 20 years ago, Chinese Medicine has seen most research projects funded by the UGC working on exploration and development of new medicine or molecular research. It is noted that the Chinese Medicine industry endorses the importance of (i) textual research in literature on Chinese Medicine and exploration of related applications, (ii) cross-disciplinary system of Chinese Medicine theories, and (iii) applications of local medicinal herbs. Nevertheless, the three research approaches are not supported by UGC's assessment or funding items. To sum, the existing UGC's assessment and funding mechanism only supports "researching Chinese Medicine" (analysis of Chinese Medicine by adopting Biomedicine methodology) instead of "Chinese Medicine research" (research based on methodology and system of Chines Medicine tradition). This is highly unfavourable to Chinese Medicine research and shows inadequate consideration for the industry and the public at large. The UGC should support and recognise Chinese Medicine research initiatives like those supported by Program 973 (aka National Basic Research Program) or The National Social Science Fund of China.] • 教資會之中醫研究評核機制以「還原類」研究為主，以理化分析等基礎作為主導，臨床研究亦以西醫式「新藥研究」為主。致使大學人員，均遠離真正中醫臨床及理論。故此	Ditto

Chinese Medicine Discipline	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
大學亦均以該等方式對教職人員作評核，結果致使中醫相關之教職人員，均以「生科醫學」知識為主，而非「中醫知識」，極不利中醫教育工作。 *[Translation: UGC's research assessment mechanism on Chinese Medicine is mostly reductionism-based majoring on scientific analysis. A majority of clinical research is on exploration and development of new medicine, which distances itself from the traditional Chinese Medicine theory and practicum. Since universities also adopt the same framework to assess the performance of Chinese Medicine academic staff, the academics concerned have an affinity with knowledge in Biomedicine instead of Chinese Medicine, which is highly unfavourable to Chinese Medicine education.]* • 大學中醫教職人員往往缺乏充份「中醫知識」，但體制關係亦需要出任公職或成為諮詢架構的當然成員。現今不論在業界之各種委員會、中醫院諮詢、註冊中醫紀律方面，大學教研代表或專家證人均普遍未為業界稱道。 *[Translation: University Chinese Medicine academic staff may have inadequate knowledge in Chinese Medicine, while they may, owing to the existing establishment, still be required to serve as ex-officio member of relevant public bodies, consultation committees in the industry or registration committees of Chinese Medicine practitioners. In this connection, the related incumbent University representatives or expert witnesses are not truly received by the industry.]*	Ditto

Chinese Medicine Discipline	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• 現有 RAE 之中醫類研究評核，並未有從中醫方法學出發，亦未有真正中醫人員參予，亦欠缺業界及校友評價。故此可云中醫類目之資助實為「外行管內行」，有必要加入中醫學術人員，以加強對研究項目之業界認同及社會影響力作出評估。 *[Translation: RAE's research assessment mechanism on Chinese Medicine does not involve insiders of the industry, or base on methodology and system of Chines Medicine tradition. It is essential to avoid the insiders being assessed by outsiders, and it should enhance the endorsement from the industry and strengthen the impact on the community.]*	Ditto

Self-financing Degree-awarding Institutions	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• Given the general concern on the marginalisation of the SF degree-awarding institutions in respect of research support, there seems a need to enhance the institutions' role and position in the overall local research landscape. For example, they can be tapped to focus on applied research.	Noted / Incorporated in the Review Report as appropriate.
• To allow sub-degree teaching staff to be also eligible to apply for RGC funding as PIs of projects.	For reference in the context of RGC Review (Phase II).

Cross-boundary Funding from the Mainland	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• With the recent development on the opening up of the national research funding for Hong Kong researchers and the advocacy on enhancing involvement of the industrial sector, one might mix up the national research funding with the resources commitment for the higher education sector as announced by the CE in her Policy Address in October 2017. It should be stressed that the additional funding committed by the Government in the Policy Address is for the higher education sector only. • It is very important that Hong Kong funding agencies is building a good alliance with the mainland government, maximum leveraging mainland resources (both money and talents). Traditionally some Hong Kong universities form good alliance with UK, Canada and Australia schools, nowadays should form better alliance with universities including THU/PKU/FuDan/ JiaoDa/ZheJiang.	Noted / Incorporated in the Review Report as appropriate.

Other Overall Views	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• The review conducted by TFRPF was comprehensive and thorough. • Appreciate TFRPF's dedicated effort in providing a holistic view on the research landscape in Hong Kong and putting forward the preliminary recommendations. • It would be important for a review to have a manageable prescribed scope, and it would be preferable to confine the scope of the present review to the higher education sector.	Noted / Incorporated in the Review Report as appropriate.

Other Overall Views	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• To ensure a timely disbursement of the additional resources undertaken by the CE, it would be desirable to highlight that the recommendations made by the TFRPF were targeted for the higher education sector. • The purpose of doing scientific research in Hong Kong is unclear, which is the most important question we should answer. Without this question remaining to be answered, it is expected that there will be many uncertainties and unpredicted changes in the research policy in Hong Kong in the future. • It is impossible for Hong Kong to get involved in every possible field of scientific research. It will be desirable if the government set up priorities/focuses on research. • To focus on HK niches: e.g. infectious diseases, early diagnostics, etc. and areas that support HK industry and public health. • Should motivate young talents and junior faculty, not the few "chair professors". • 擔心由政府給予意見去訂立研究策略未必是最好的做法，認為應該保留現時由院校及學者自主訂立研究範疇的做法。 *[Translation: There is concern about the Government giving directive in setting out research strategy. It may be preferable to retain the current practice of reserving the autonomy of institutions and scholars in setting out their own research areas.]* • Junior colleagues should be provided with more funding opportunities for their career development and advancement.	Ditto

Other Overall Views	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• As for sustainable research strategies, emerging and new themes of research in the new world ahead should be given equal emphasis as other areas. More inclusive, creative and non- mainstream research streams should be covered in this sustainable strategies and support for research talents. • The report compares HK funding schemes with those of other countries. At last there is a realisation that HK is behind many developed countries. Two decades of possible ambitious development in science and technology have been lost even though the HK economy has been in surplus for all this time. Singapore with a similar population and economy has now far outstripped HK. • In the successful research countries such as the USA, there is a venue for single-PI-driven projects that are properly funded. There is also a category of high risk projects. In Europe there is the ERC scheme where single investigators can apply for "blue sky" ambitious projects. Even though these are highly competitive, it is through these avenues that the best science can be carried out and the individual excellence can be nurtured, without the requirement to be in a group before one can carry out ambitious projects. • Projects with cutting edge technologies should be given priority, instead of those so-called mainstream/safe ones that anyone can do in the world. Perhaps a fund or a mechanism should be set up to promote and to encourage revolutionary and true innovative discoveries in Hong Kong.	Ditto

Other Overall Views	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
• It is highly recommended that the funding be substantially increased and committed to the basic end of research rather than the downstream, to match the level of support given in the surrounding regions. • It is suggested that more funding be apportioned to the GRF. The current level of funding is much less than what has been sought for the majority of projects and can be obtained by certain individuals internally from their universities without external vetting. In comparison, the NSFC grants which are vetted within China only are able to secure more funding than the ERG GRF. • While it is encouraging to have a large number and variety of schemes, they must have sharper differentiation and purposeful features in order to achieve the desirable outcomes. There is accordingly a need to consolidate/integrate some of these schemes and at the same time inject more funding so as to achieve the targeted and concentration effects, and at the same time reduce/optimise administration time/costs.	Ditto
• The existing proposal/grant/report processes and requirements are laborious and bureaucratic. The "over-administration" incurs costly operations, is counter-productive and not conducive to the vibrant and productive research environment and culture that we are trying to build. • Any policies or measures, be they introduced by the UGC/RGC or the university management, that exacerbate competition at the expense of the ultimate goal must be avoided, as it is commonly observed that	Public money needs to be fully accounted for.

Other Overall Views	
Key Points Made by Respondents	**Task Force's Suggested Responses/Actions/Remarks**
greater demand for accountability and competition on individual researchers has the undesirable consequence of creating layers of administration and paperwork. • Given the frequent mentioning of "competitive" in the Interim Report, one may wonder whether "competition" is the key word as far as research funding is concerned. Academics have been making too much effort in handling administrative work arising from competing for research funding. The draining of manpower has adverse effect on their teaching duties. • 考慮目前研究撥款競爭激烈，以至不少研究計劃值得支持最後卻得不到資助（fundable but not funded）。現時教資會在研究資助中引入競爭以提升研究效益，以量化的競爭成績跟撥款掛勾的做法，已經在高教界形成惡性循環，對士氣、人事變動以致教學質素均造成嚴重負面影響，同時製造大量行政工作和支出。 *[Translation: The current keen competition for research grants has rendered some fundable projects not funded. The current UGC practice introduces a competition element into the allocation mechanism to enhance research excellence, while this approach has initiated a vicious circle linking quantitative research competition with fund allocation in the higher education sector, which has brought about negative impact on staff morale, personnel stability and teaching quality on one hand, with academic staff incurring huge amount of administrative work and costs on the other hand.]*	Ditto