[FOR IMMEDIATE REPORTING]

SPEECH BY MR HENG SWEE KEAT, DEPUTY PRIME MINISTER AND COORDINATING MINISTER FOR ECONOMIC POLICIES AT THE CREATE SYMPOSIUM ON "SCIENCE OF SUSTAINABLE CITIES", 10 JULY 2023

Mr Peter Ho, Chairman of the CREATE Governing Council
Presidents of CREATE partners and speakers
Ladies and Gentlemen,

1. Good morning. A warm welcome to everyone, especially those who have travelled a long distance to join us for the CREATE symposium on the Science of Sustainable Cities.

   a. It has been four years since we last met in-person. While we had two virtual meetings during the COVID period, it is not the same as interacting over tea breaks and meals, and having spontaneous exchanges.

   b. So I hope you make the most of your time in Singapore to catch up with old friends, make new ones, and spark fresh collaborations!

16 years of CREATE

2. CREATE, or the Campus for Research Excellence and Technological Enterprise, turns 16 this year.

a. When we started CREATE 16 years ago, Singapore was still early in our research, innovation and enterprise journey.

b. We wanted to bring top universities and researchers to Singapore to develop our research ecosystem, and give our universities and researchers the opportunity to learn from, and work with the best.

c. So we initiated contact with a few universities and institutions, and gradually more. Today, we have nine partners which span the globe:
   i. CNRS, the French National Centre for Scientific Research
   ii. ETH Zurich
   iii. Hebrew University of Jerusalem
   iv. Massachusetts Institute of Technology (MIT)
   v. Shanghai Jiao Tong University
   vi. Technical University of Munich (TUM)
   vii. University of California Berkeley
   viii. University of Cambridge and
   ix. University of Illinois Urbana-Champaign (UIUC).

3. At that time, and even now, the CREATE concept is a refreshing one.

a. Whereas bilateral university exchanges are quite common, we were the first country that invited different universities to

locate their research labs together, within a purpose-built campus.

b. Each partner university developed extensive and mutually beneficial collaborations with our Singapore institutions, in areas ranging from future mobility solutions to healthcare.

c. I have visited many of these labs, and am impressed by the quality of research and the diversity of researchers that they bring together to work on solutions.

Reaping synergies

4. Over the years, CREATE has reaped even greater synergies as an international research campus.

a. As the intersection for nine different universities, and located within our very own NUS, the CREATE campus carries immense opportunities.

b. There is a wonderful diversity of backgrounds – the 1,000 international and local research talent on campus hail from over 30 different countries, with research disciplines ranging from engineering to biology to urban planning.

c. The corridors and pantries at CREATE are thus excellent interaction points – bumping into colleagues from different

labs and different disciplines can spark off serendipitous discoveries.

5. Universities and research institutions around the world are emphasising multidisciplinary and interdisciplinary research.

   a. Indeed, the issues and challenges that we face today, like climate change and ageing, do not fit into neat academic boxes.

   b. Developing holistic solutions to these issues requires the perspectives of different disciplines.

   c. We are nurturing an interdisciplinary approach at CREATE, which enables researchers to harness the diversity of backgrounds, cultures and expertise that we have in CREATE. We've now established 15 interdisciplinary programmes spanning the areas of environment, energy, human and urban systems.

   d. For example, ageing populations will exert greater pressure on healthcare systems all over the world.

      i. Healthcare is traditionally a high-touch sector but if we can tap on technology, we could ease manpower pressures while achieving good outcomes.

ii. CREATE's Future Health Technology programme studies the scalability and efficacy of Mobile Digital Health technologies. One example is the RELab tenoexo, a wearable hand exoskeleton that could administer physiotherapy exercises.

iii. It will be tested in a study for stroke patients, conducted with the Tan Tock Seng Hospital's Centre for Advanced Rehabilitation Therapeutics. I should add that I am very happy to learn about this – a very dedicated team of rehab specialists helped me in my recovery from a severe stroke seven years ago.

6. The spirit of CREATE – bringing different universities and researchers together to discover and co-create – is particularly relevant today.

a. Technology cycles are shortening, and the pace of innovation has increased. The possibilities for new discoveries and breakthroughs are immense, and bring hope for a better world.

b. Yet the global commitment for collaboration has diminished, as a result of geopolitical contestation.

i. We are seeing this spill into the realm of science and technology.

c. This is a loss to humanity, because science should be global as it has the capacity to uplift populations, protect our planet and create a better future for all.

d. So here at CREATE, let us build on the strong foundation that we have established to explore how a collaborative model of partnership can be more effective in addressing complex real-world challenges. We hope that in CREATE, we have created a crucible for the fusion of great ideas.

Raising our ambition

7. With CREATE's coming of age, it is timely that we explore new frontiers.

a. So let me suggest three ways to raise our collective ambition to achieve greater impact.

8. First, CREATE should embark on bold, game-changing research to develop solutions that are made in Singapore, for the world.

9. For the past few years, CREATE has chosen to focus on the Science of Sustainable Cities.

a. This is intentional, given Singapore's own existential imperative, and because it is a globally salient topic.

b. By the end of this century, urbanisation will see most of the world's population living in cities. I hope that what is tested in Singapore may also be relevant to the world.

c. Having emerged from the pandemic, we are also experiencing the impact of climate change more frequently and acutely. It is timely that we re-examine what it means to build more sustainable and resilient cities.

10. Through science, there is a possibility of overcoming constraints and challenges. But to achieve new breakthroughs, we must be bold and ambitious in challenging today's paradigms and venturing beyond current trajectories.

a. For example, with the advancement of AI, the nature of how we work, live and play will change radically. We must integrate new technologies in a human-centric way to achieve a new paradigm.

b. This is what we seek to do at CREATE, through an inter-disciplinary approach.

c. The Mens, Manus and Machina programme will integrate AI, machine learning, robotics, and social and behavioural sciences to maximise efficiencies in a machine-assisted world.

i. At the same time, the programme will also develop social frameworks for human-machine interactions, to ensure that humans continue to thrive in this new future.

11. Another area where we seek to make a difference is in alternative foods, which is critical for food security in the face of climate change.

a. CREATE recently launched the Bioengineering Tools for Next-Generation Cellular Agriculture (or CellAg) programme, which will focus on improving the upstream manufacturing of alternative cell-based foods.

b. For example, the CellAg programme aims to develop sensors for the early detection of microbial contamination during the production of cell-based foods, which is the cause of significant wastage today.

c. It is also working on developing novel compounds that inhibit microbial contamination without the use of antibiotics.

d. If successful, these can increase the yield and quality of alternative foods, while reducing costs.

12. I have spoken on the need to be bolder in our next phase of CREATE. How we embark on this work also matters. So, my second suggestion is that CREATE must be similarly bold in mobilising new forms of partnerships, across institutions and across the world, to do ground-breaking work which no one country or institution can tackle on their own.

    a. One way to do this is to shift from collaborations that traditionally involve only a small number of partners, to bringing together the best minds across multiple institutions to tackle a common challenge or collaboration by themes.

    b. We have made a good start in CREATE.

13. For example, Singapore took on the challenge of creating the world's first Digital Twin for modelling the climate of an entire city.

    a. This required merging many complex models into one single model, so that the interdependencies across different systems – such as our weather systems, energy systems, buildings and natural environment – can be studied together.

    b. To achieve this, CREATE brought together top minds from ETH Zurich, Cambridge, TUM, NUS and SMU to work with our Government agencies.

c. This work has been highlighted by the World Economic Forum and Bloomberg, and has inspired cities like Sao Paulo and Zurich to seek similar modelling to address the heat island effect that all cities are challenged with.

d. Being bold in our partnerships will enable us not just to bring together the best teams to tackle challenges, but also surmount the politics to advance science.

e. Such multilateral partnerships, where we bring together parties of different talents and backgrounds to address complex challenges like climate change, healthy living, and sustainable development, are critical for humanity to make progress.

14. My third and <u>final</u> suggestion relates to translating such bold, game-changing research into tangible solutions. In the regard, I hope to see <u>CREATE deepen its capacity as an innovation hotbed and become an integral part of Singapore's startup ecosystem.</u>

a. Basic research is critical and we must continue to invest in it. But it is equally important to translate scientific insights into innovations so that they can achieve their fullest impact and potential.

b. I am therefore encouraged by programmes such as the Disruptive and Sustainable Technologies for Agriculture (or

DiSTAP) programme, which is doing cutting-edge work that could benefit farmers everywhere.

i. Under DiSTAP, plant scientists and chemical engineers worked together to produce new analytical tools to detect plant stress before the signs are visible.

ii. Such early detection would allow farmers to intervene much earlier to save their crops and reduce losses.

iii. The team is now going into the next phase of testing these tools in an indoor farm setting. If successful, the goal is to scale up and make such tools widely available to farmers across the world.

15. Singapore has a vibrant startup ecosystem that CREATE can plug into, to scale good science and research into solutions that can improve lives and livelihoods.

a. Our venture capital market is lively, with 651 deals valued at nearly $11 billion recorded in 2022.

b. We also have platforms like the Singapore Week of Innovation and Technology (SWITCH), that bring together

and feature the innovative capacities of our startup community.

c. Singapore can be a Global-Asia node of technology, innovation and enterprise connecting with other global innovation nodes to launch and scale solutions in Asia and across the world .

d. So even as CREATE deepens its capabilities to drive bold and game-changing research, I hope that you will also consciously think about, and tap on the broader ecosystem that Singapore offers, to raise the impact of your good work.

Conclusion

16. Let me conclude.

17. From its modest beginnings, CREATE has become an excellent showcase of what we can collectively achieve through collaborations in science.

a. We have built up fruitful relationships, embarked on meaningful collaboration, and broke new ground together with our nine partners.

b. This is valuable, and we must continue to tap on one another's strengths to chart an ambitious way forward.

c. In our next phase, let us explore new frontiers, create game changing solutions, and mobilise new forms of partnerships to translate research into innovation.

d. Amid a more contested global environment, CREATE can lead the world in offering collective solutions and action from the scientific community to tackle shared existential challenges.

e. In so doing, it can shine a path for fruitful collaborations across the global scientific research and innovation community, to build a better world, and a better future for all.

18. I wish you all a fruitful symposium. Thank you.