



台灣健康產業發展前景



錢宗良 Chung-Liang Chien, Ph.D.

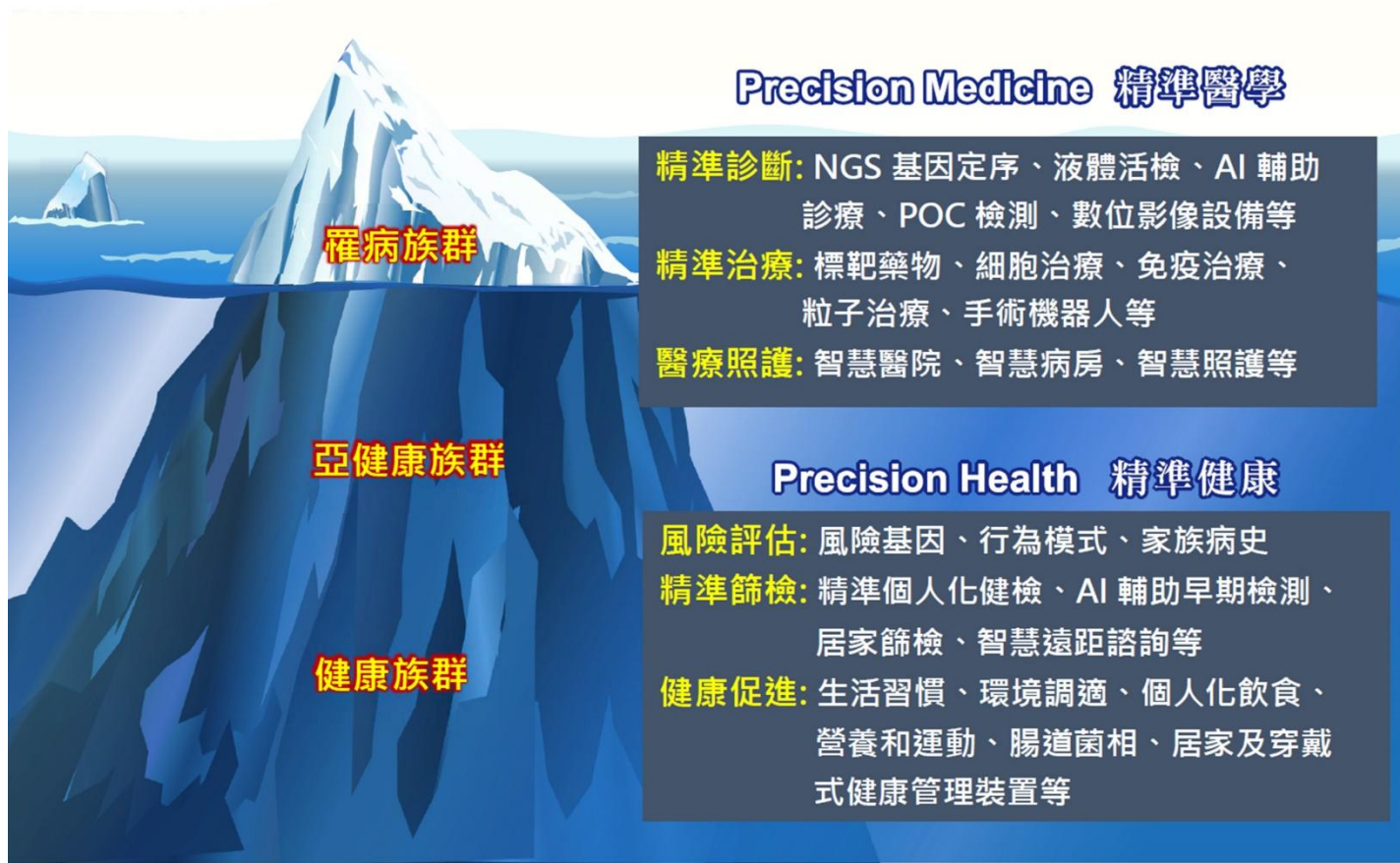
Advisor, Century Biotech Development Corporation (TBIP)
Professor, College of Medicine, National Taiwan University
CEO, Institute for Biotechnology and Medicine Industry

2025-02-19

大綱

1. 精準健康與精準醫學
2. 臺灣精準健康產業：資通訊＋生醫產業
3. 國際行銷臺灣健康產業：生策會的任務

精準醫學與精準健康： 誰是未來大健康產業的藍海？



Precision Medicine 精準醫學

精準診斷: NGS 基因定序、液體活檢、AI 輔助
診療、POC 檢測、數位影像設備等

精準治療: 標靶藥物、細胞治療、免疫治療、
粒子治療、手術機器人等

醫療照護: 智慧醫院、智慧病房、智慧照護等

Precision Health 精準健康

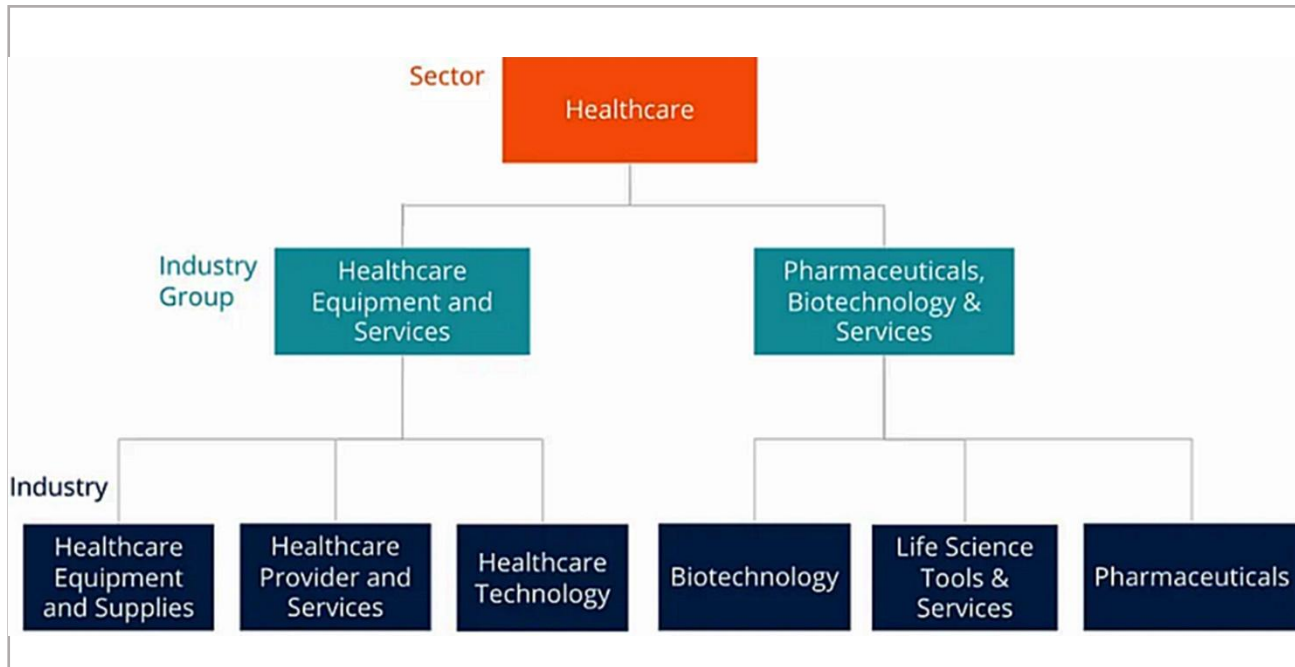
風險評估: 風險基因、行為模式、家族病史

精準篩檢: 精準個人化健檢、AI 輔助早期檢測、
居家篩檢、智慧遠距諮詢等

健康促進: 生活習慣、環境調適、個人化飲食、
營養和運動、腸道菌相、居家及穿戴
式健康管理裝置等

Healthcare sector by GICS definition

- ❑ The healthcare sector includes the following subsections, as per Global Industry Classification Standard (GICS)



Global Markets:

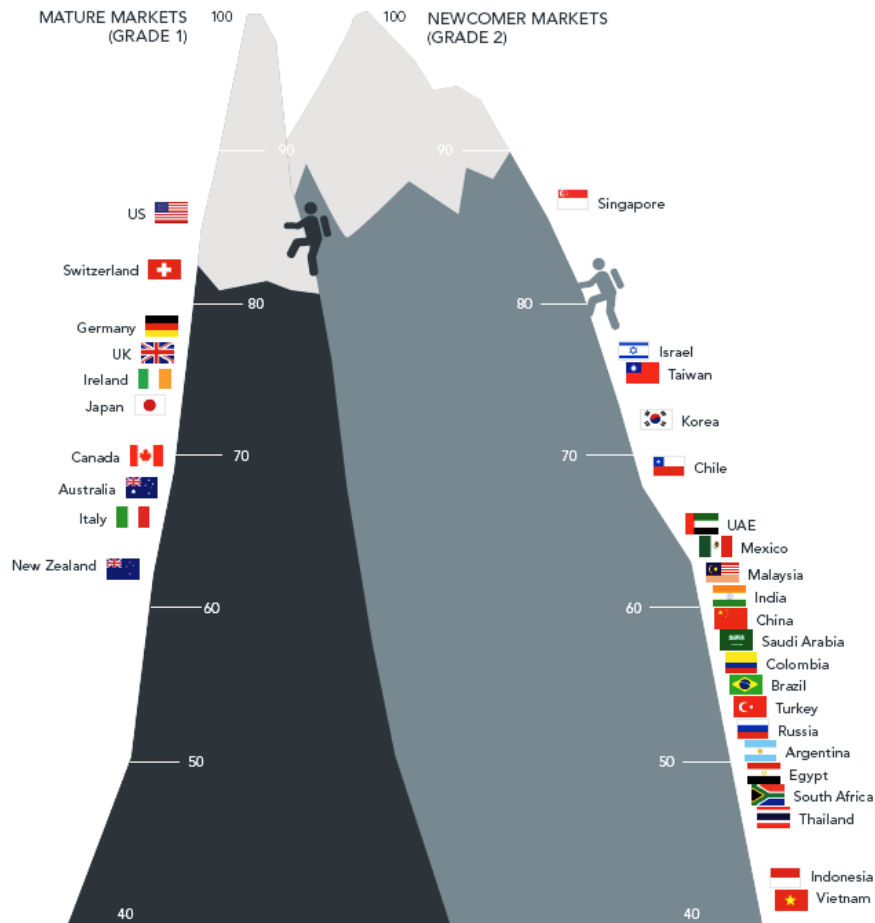
- International Healthcare
- Bio-pharmaceutical
- Medical device
- Regenerative medicine
- Smart health
- Precision medicine
- Sports medicine

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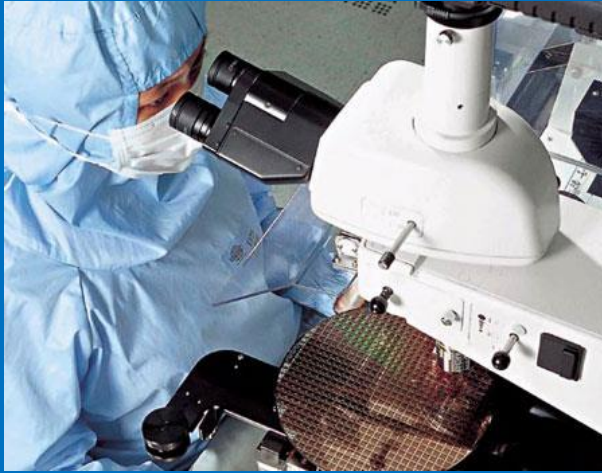
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Taiwan Core Competences

- Taiwan ranks 3rd in the newcomer markets
- World-class quality of medicine and talent
- The best healthcare system and big data
- High quality clinical trials and R&D capacity
- Well-established research infrastructure
- ICT supply chain, talent and manufacturing
- AI and 5G R&D in national level



Source compiled by IBMI, RBMP (2021)



ICT



Hospital



Smart Hospital



Healthcare IoT
Platform



Health AI



Medical &
Wearable Devices



Hospital
Equipment

Advantages of Taiwan Medicine



Outstanding Healthcare Insurance System

- ❖ 99.6 % of Taiwan's 23.57 million people covered under the government-run National Health Insurance (NHI)
- ❖ Good accessibility-The NHI has a very high approval rate among Taiwanese people



High Quality Healthcare Services

- ❖ Out of 200 of the largest hospitals in the world, 14 are in Taiwan.
- ❖ Taiwan ranks third, just after the USA and Germany, in terms of medical service quality.
- ❖ shorter wait times for beds in large hospitals and medical centers



World-class Health Database

- ❖ National Health Insurance Research Database has been collected for more than 29 years (Since 1995).
- ❖ Medical centers with complete medical record and imaging data

Advantages of Taiwan ICT industry



Most concentrated industry clusters

- ❖ World's densest and most technologically advanced semiconductor production base.
- ❖ The Major Procurement Center for Global ICT Companies & Buyers



Strong ICT manufacturing capabilities

- ❖ Rich manufacturing experience and outstanding technologies
- ❖ The heart of the world's tech supply chain, offering high-quality products from IC design, semiconductor, to electronics.



Rapid Commercialization

- ❖ Ranked 1st in Worldwide Major ICT product market share for more than 10 products
- ❖ High levels of hardware/software integration capability for flexible production and rapid commercialization

Taiwan's ICT Sector in Healthcare

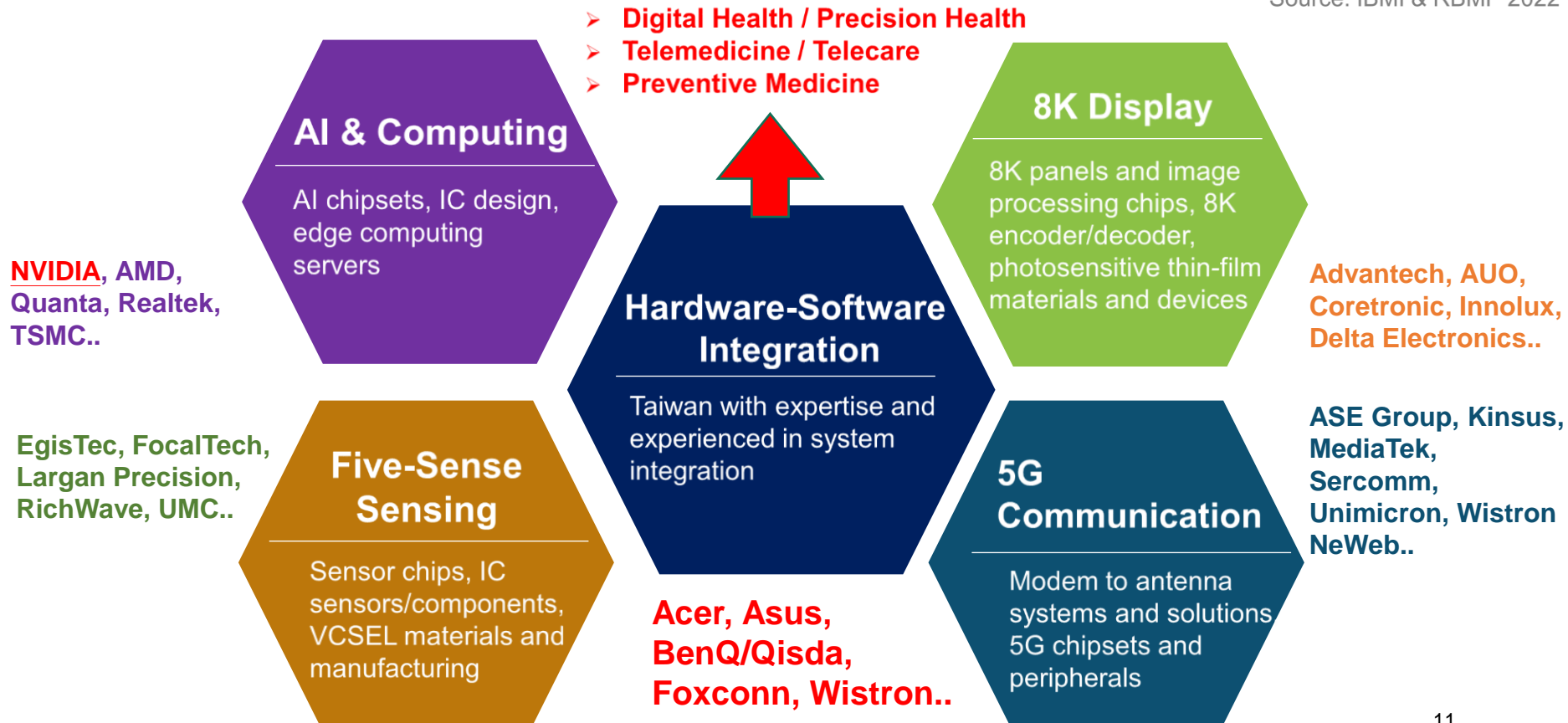
Precision Healthcare Industry

	Mobile health	Medical equipment	Smart hospital	Gene/cell therapy	Biomedicine	
Companies						
Product pipelines	<ul style="list-style-type: none"> ■ Tele-healthcare ■ IoT solutions ■ Wearables ■ Health management 	<ul style="list-style-type: none"> ■ X ray/ultrasound ■ Micro CT ■ Surgical robots ■ Capsule endoscopy ■ Hemodialyzer ■ Pathology/AI Image ■ Vital sign monitor 	<ul style="list-style-type: none"> ■ Smart ward/operating room ■ Surgical VR ■ AI solution ■ HMS ■ EMR / EHR ■ Medical display 	<ul style="list-style-type: none"> ■ DNA sequencer ■ DNA microarray ■ Protein & genetic testing ■ CTC system ■ Cellular therapy 	<ul style="list-style-type: none"> ■ AI chip ■ Biochip for gene sequencing ■ RF & Wireless chip ■ Biosensor ■ Display component ■ Organic semiconductor 	
Areas of application						

Taiwan Industry Overview

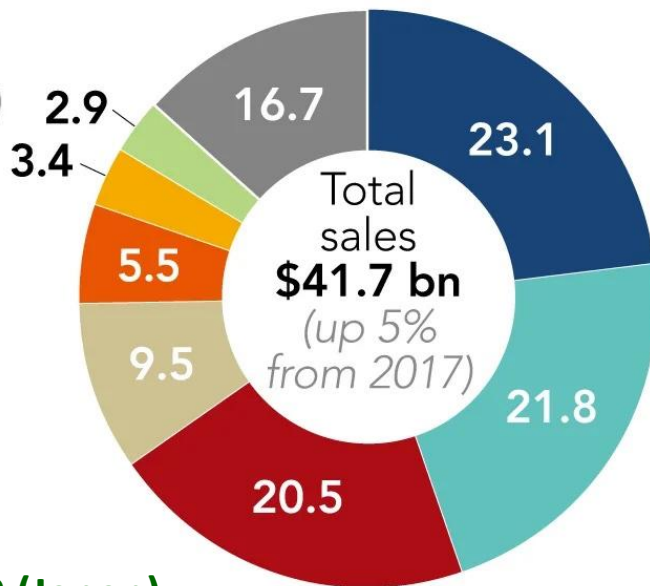
Market Players and Focus Areas

Source: IBMI & RBMP 2022



Diagnostic imaging equipment global market share by sales (2018, in percent)

- Siemens Healthcare (Germany) 2.9
- General Electric (U.S.) 3.4
- Philips (Netherlands) 9.5
- Canon (Japan) 5.5
- Fujifilm Holdings (Japan) 5.5
- Carestream Health (U.S.) 2.9
- Hitachi (Japan) 2.9
- Others 16.7

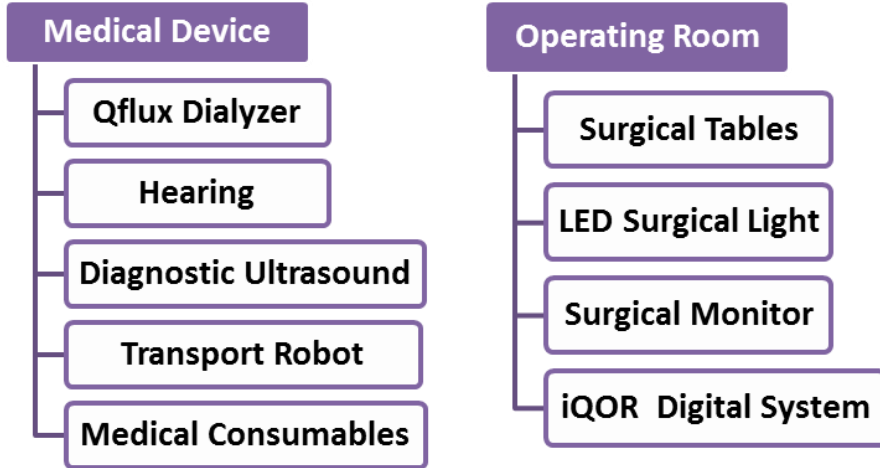


Source: Evaluate

8.4+ 9.5 =17.9 (Japan)

2月18日，富士表示：「兩家企業合併後，會將各自影像處理和人工智慧軟體和日立超音波、MRI 結合，**打包販售給醫療機構。**」 **To provide the total solution!**

Featured Products



Solutions

Smart Operation Room



ODM / OEM of Medical Device

Other Smart Healthcare Solutions

Fitness System

Smart Wearables

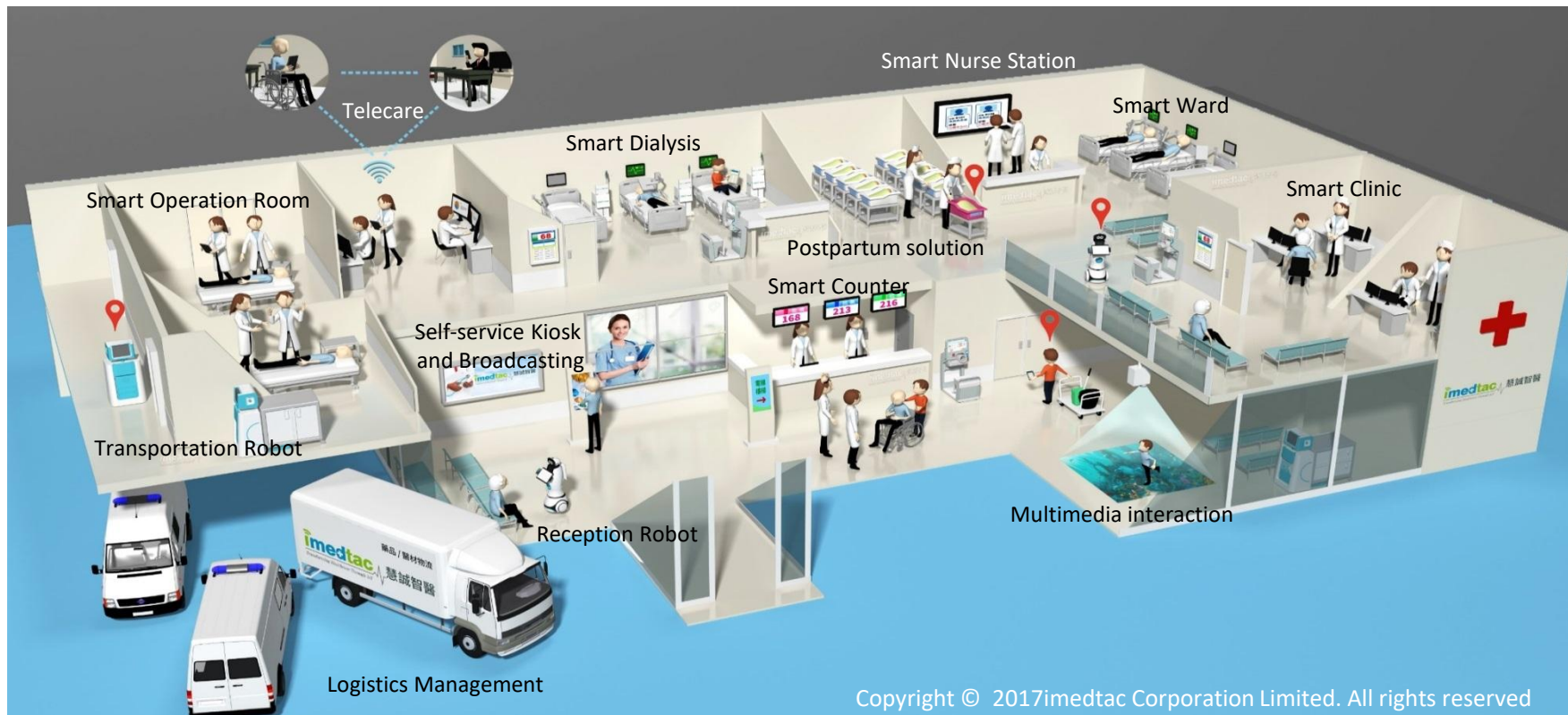
Smart Ward

Health Management System

Long-Term Care Monitoring Solution

Integrated Solutions in Smart Hospital

Modularize IoT for Hospital and Healthcare Application by **imedtac** 慧誠智醫



Taiwan leading hospitals are expanding their productivity from building smart hospital...



彰化基督教醫院
CHANGHUA CHRISTIAN HOSPITAL



員林基督教醫院
Yuanlin Christian Hospital



U.S. Green Building Council
LEED Gold Level Certification on
Dec, 2015



ICT Players launch
products and solutions:

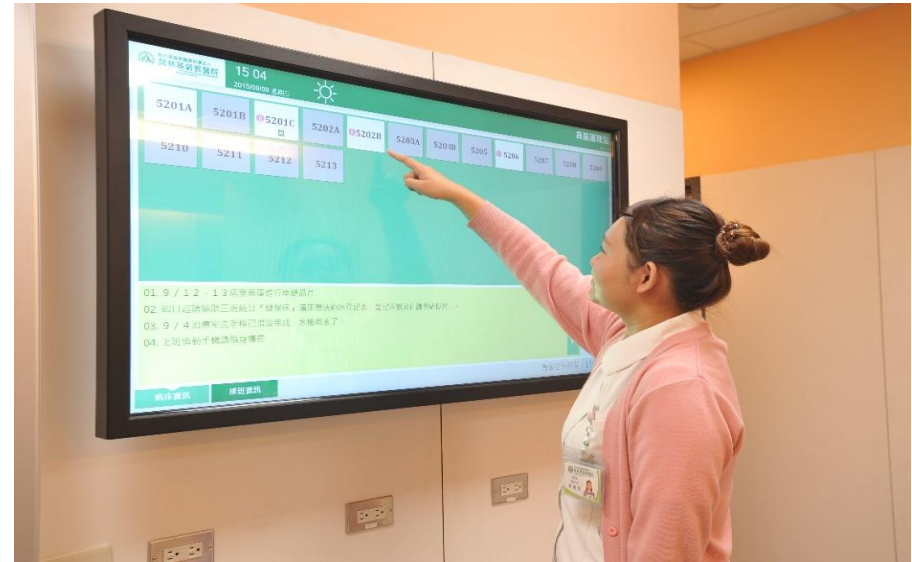
- ◆ Smart Nurse Station
- ◆ Smart Ward
- ◆ Smart Clinic
- ◆ Smart Counter
- ◆ Smart Dialysis
- ◆ Smart Operation Room
- ◆ Multimedia interaction
- ◆ Accompany robot
- ◆ Logistics Management



Smart Nurse Station: Nursing Dashboard

Improvement Nurse Care Quality and Work Flow

1. No paper works
2. Real time nursing shifting
3. Real time patient information (location, activity, schedule)
4. Pre-alarm system



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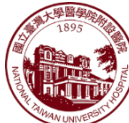
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新南向醫衛資源整合平臺計畫 113年度



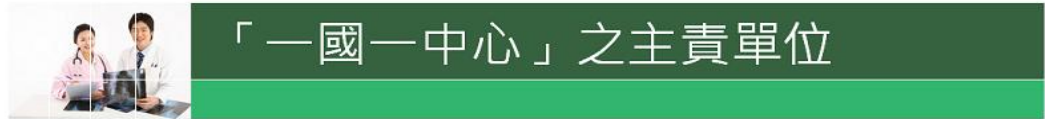
衛生福利部雙和醫院
(臺北暨北醫學大學共理經營)



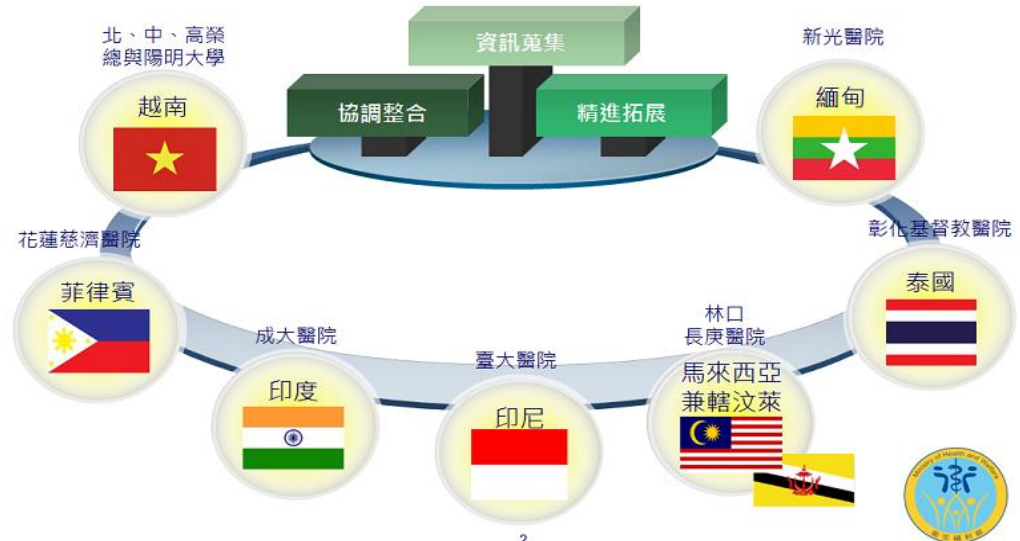
8th Healthcare EXPO · TAIWAN

- ❑ Taiwan has become the most important exporting Smart Hospital Solution country in Asia.
- ❑ Offer Total solutions to assist Asia countries to build smart hospitals or improve hospital management effectiveness.

- Thailand (彰基)
- Malaysia (長庚+中國附醫)
- India (成大)
- Vietnam (榮總+高醫)
- Indonesia (台大+亞東)
- Philippine (慈濟)
- Myanmar (新光)



透過委託具醫學中心量能之機構，在當地執行一國一中心計畫。



113 「新南向醫衛合作與產業發展計畫」(10 國 13 中心)

國家	區域	得標醫院
越南 (A 區)	峴港 (含) 以北	臺北榮民總醫院
越南 (B 區)	峴港以南	財團法人私立高雄醫學大學附設中和紀念醫院
印尼 (A 區)	雅加達、萬隆、泗水及三寶瓏	國立臺灣大學醫學院附設醫院
印尼 (B 區)	雅加達、棉蘭及巨港	醫療財團法人徐元智先生醫藥基金會亞東紀念醫院
馬來西亞 (A 區)	吉隆坡及馬來亞半島 (西馬)	長庚醫療財團法人
馬來西亞 (B 區)	吉隆坡、沙巴、砂拉越 (東馬) 及汶萊	中國醫藥大學附設醫院
泰國 (A 區)	泰國 (除泰北以外)	彰化基督教醫療財團法人彰化基督教醫院
泰國 (B 區)	泰北及寮國	衛生福利部雙和醫院 (委託臺北醫學大學興建經營)
菲律賓 (A 區)	馬尼拉及其以北	
菲律賓 (B 區)	馬尼拉及其以南	臺北市立萬芳醫院-委託臺北醫學大學辦理
印度		國立成功大學醫學院附設醫院
緬甸		新光醫療財團法人新光吳火獅紀念醫院
柬埔寨		衛生福利部桃園醫院



《主責新南向政策醫衛產業供應鏈工作小組》 醫衛產業合作搭橋



台灣利基醫衛產業鏈

數位醫療



- ✓ 遠距照護系統
- ✓ IoT設備/維修
- ✓ 穿戴式裝置
- ✓ 健康數據監測分析與管理系統

醫材設備



- ✓ 血液透析器
- ✓ 微型電腦斷層
- ✓ X光/超音波
- ✓ 生理監測設備
- ✓ 膠囊內視鏡

細胞治療



- ✓ CTC檢測系統
- ✓ 細胞療法
- ✓ 基因定序及晶片
- ✓ 蛋白質與基因檢測

精準檢測



- ✓ AI晶片
- ✓ 有機半導體元件
- ✓ 影像顯示元件
- ✓ 體徵訊號量測感應器

企業

產品

111年度執行成果： Thailand Medical Industry Visit in 2022

(Chunghwa Telecom, Imedtac, Huede Technology, Insight Medical Solutions)



新南向政策醫衛產業供應鏈工作：

-新南向國家醫衛合作會議/馬來西亞醫療產業拜會-

Oct. 11-14, 2022



APHM(馬來西亞私立醫院協會)



Gleneagles Hospital Kuala Lumpur



Prince Court Medical Centre



Subang Jaya Medical Centre



Pantai Hospital Kuala Lumpur



IHH Healthcare

MET & 台灣醫院 (長庚與高醫) 及產業 (緯創、研華、永信、永生; 友華) 一同拜會馬來西亞私立醫院協會以及重要國際醫療服務的私立醫院集團，協助建立合作橋梁。

112年度執行成果： -新南向國家產業媒合與市場拓銷活動

2023台泰智慧醫療研討會坊（泰國曼谷）

- ◆ 國內廠商：慧誠智醫、大江基因、龍骨王、世基生物、安克生醫、醫百科技、倍利科技、上銀科技、神經元、三鼎生物、英華達、柏瑞醫、福濟生物、雅博、安奕生物、和鑫生技、振馨科技、慧術科技、中華電信、華碩電腦
- ◆ 展示項目：智慧醫療產品，包括5G技術、人工智能解決方案、圖像分析平台、遠程醫療解決方案、智能病房



建置衛福部新南辦，推動、強化醫衛合作與產業發展

- 2024台灣泰國形象展 (2024/ 11/21-23) -

• 展出重點：

- 智慧醫療技術受青睞：台灣的智慧醫療技術在泰國市場受到熱烈歡迎。許多參展商展示了先進的醫療器材、軟體及解決方案，如遠距醫療、人工智慧輔助診斷等，為泰國的醫療體系帶來創新。
- 組織器官重建技術引關注：三鼎生技作為首次參展的台灣企業，其開發的人體組織器官重建平台備受關注。該平台可提供客製化的高階醫療器材，為患者帶來更精準的治療。

• 參展效益：

- 台灣醫療產業的創新能力：台灣的醫療產業不斷推陳出新，開發出許多符合國際標準的醫療產品與服務。
- 政府政策的支持：政府積極推動新南向政策，為台灣企業拓展海外市場提供了強大的支持。
- 泰國醫療市場的需求：泰國醫療市場對高品質、高科技的醫療產品與服務的需求不斷增加，為台灣企業提供了廣闊的商機。



建置衛福部新南辦，推動、強化醫衛合作與產業發展

臺灣醫療科技展 Hospital Collaboration Networking (2024/12/5; 12/6)

Hospital Collaboration Networking | 12/05 16:00-17:30 | Room 402

Advised by: Ministry of Health and Welfare
Organized by: IBMI, RBMP



The Polish Association of Private Hospitals
Andrzej Sokolowski, President



Thailand Private Hospital Association
Paiboon Eksaengsri, President



The Association of Private Hospitals of Malaysia
Datuk Dr Kuljit Singh, President



Philippine Hospital Association
Jose, Jr. P. Santiago, President



Private Hospitals Association of the Philippines
Jose Rene de Grano, President



Myanmar Private Hospitals' Association
Aye Aye San, President

Industries / Associations	Speaker
Guest Speech	
The Polish Association of Private Hospitals	Andrzej Sokolowski, President
Thailand Private Hospital Association	Paiboon Eksaengsri, President
The Association of Private Hospitals of Malaysia	Datuk Dr Kuljit Singh, President
Philippine Hospital Association	Jose, Jr. P. Santiago, President
Private Hospitals Association of the Philippines	Jose Rene de Grano, President,
Myanmar Private Hospitals' Association	Aye Aye San, President

Networking



14:00	Opening Remark	
14:10	Keynote Speech	

14:10	Global Challenges in Healthcare Quality	Keynote Speaker Ashok Philip, President, World Medical Association
14:25		





医療ICTで精密保健を推進 バイオ医療で世界に挑む（下）

【バイオ医療編2】

バイオ医療産業は、これまでの創薬から精密保健（プレジジョン・ヘルス）に重点を移している。台湾の蔡英文総統は昨年5月、2期政権の核心戦略産業の1つに精密保健産業を定めた。国家発展委員会（国発会）は同事業の推進に当たって情報通信技術（ICT）を軸に据える構想。台湾は得意とするICTと医療の2分野を融合し、世界のバイオ医療の最前線に飛び込む。



生策会の銭宗良執行長は、日本と提携してヘルスケア製品でインド市場を開拓することを表明した＝台北（NNA撮影）

台湾のバイオ業界団体、国家生技医療産業策進会（生策会）にハイテク医療機器メーカーとして加盟する企業は59社。生策会の理事会には、EMS（電子機器の受託製造サービス）大手の和碩聯合科技（ペガトロン）や緯創資訊（ウィストロン）、産業用コンピューター大手の研華科技（アドバンテック）、電子機器受託製造大手の佳世達（キスダ）などのトップが名を連ねる。

ハイテク企業が医療分野に参入する理由は、「EMSなどICT各社がこれまで主力に据えてきたパソコン市場よりもヘルスケア市場の方が大きい」（市場関係者）ことにある。

緯創は昨年、カナダ企業のB-Temiaと共同開発した歩行補助器具「啓而走 Keeogo」の米国での販売を開始した。同業の仁宝電腦工業（コンパル）は、傘下会社と提携先の中国企業を通じて、中国市場向けに血糖値測定器などの医療器材などを供給。研華科技は自社開発のスマート医療システムがオランダの大学病院などで採用された。

生策会は官民の橋渡し役としての動きを担う中で、近年は国際市場の開拓に注力。医療に関わるトータルソリューションを提供し、システムやソフトウェアのアップ

生策会の銭執行長によると、遠隔医療は台湾域内よりも中国やオーストラリア、米国など国土の広い国・地域で需要が大きい。コロナ後は遠隔医療に関わるソリューションを提供することで、“マスクだけではない台湾”を世界にアピールする考えだ。（バイオ医療編は菅原真央が担当しました）

<メモ>

生技新薬産業発展条例

台湾政府は生技新薬産業発展条例の適用期間を10年延長する方針だ。発展を支援する対象はこれまでの「新薬」「高リスク医療材料」「動植物用薬」「再生医療」「精密医療」に、「デジタル医療」と「国家戦略バイオテクノロジー製品」の2分野を追加した7分野とする。

R&Dや人材育成、営利事業株主などに対する従来の税制優遇を維持した上で、個人株主への租税優遇も増やす。

第5屆臺日第三國市場合作委員會會議：臺日醫衛合作

2023 02/07- 02/09

2/7
15:30-17:00

拜會國際醫療研究中心國際醫療協力局
地址：東京都新宿区戸山1-21-1 研修センター3F



由日本卓越醫療法人(MEJ)三好知明理事(左一)協助安排拜訪國際醫療研究中心國際醫療協力局(NCGM)，由村上仁部長(右四)接待並簡報介紹 NCGM

2/8
16:00-17:00

拜會三井物產
地址：東京都千代田区大手町1-2-1



衛福部參訪團拜會三井物產，由永弘智室長(右三)及尼田雄大先生(右二)協助接待。

第5屆臺日第三國市場合作委員會會議：臺日醫衛合作

2023 02/07- 02/09

18:30-21:00

晚餐：MET 感謝 MEJ 餐會



2/8 晚上認識的 MEJ 產業代表船越國宏先生(右三)。船越先生是資深的血液研發部門退休轉到產業 Sysmex 當顧問。在日本政商界具有相當影響力的人物。已經順便口頭邀請來參加台灣醫療科技展。MET 吳明彥執行長感謝 MEJ 三好理事(右四)及羅朝暉課長(右一)的協助與翻譯，對此行提供完善的安排。

2/9
9:30-10:30

德洲會醫療體系總部
102-0074 東京都千代田區九段南 1-3-1
東京堂千代田ビル

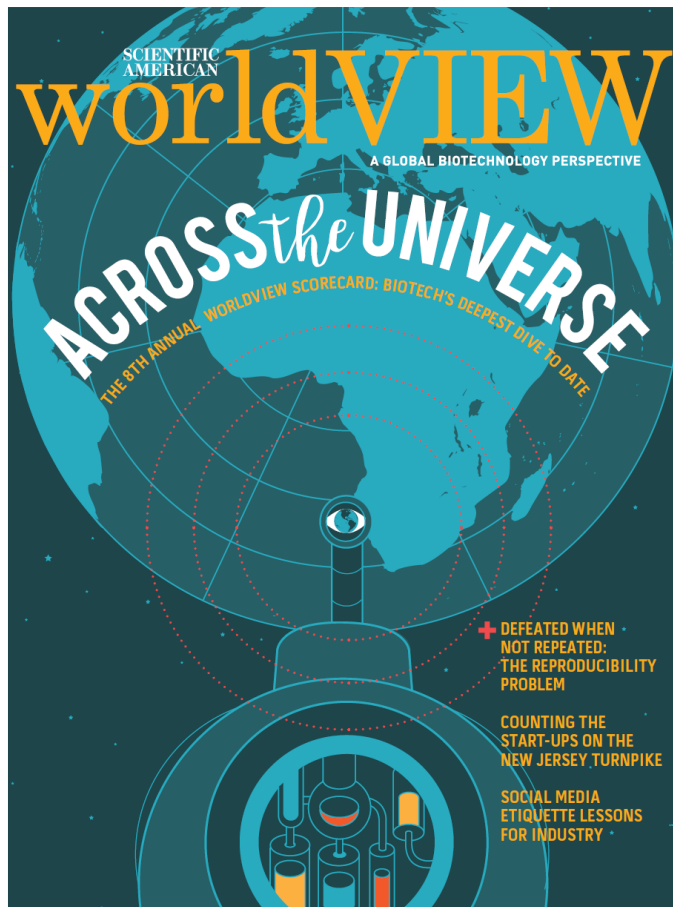


衛福部參訪團拜會德洲會總部，本部部長石川一郎(右四)與國際部渡部昌樹課長(左一)協助接待。生策會錢執行長介紹Taiwan Health care EXPO 並以口頭邀請國際部渡部課長今年底派代表來台參加，尤其能夠邀請德洲會旗下的資訊醫療系統公司。

Branding Taiwan



Thank you for your attention



2016 & 2020 Scientific American

WORLDVIEW SCORECARD

-  PRODUCTIVITY
-  IP PROTECTION
-  INTENSITY
-  ENTERPRISE SUPPORT
-  EDUCATION/WORKFORCE
-  FOUNDATIONS
-  POLICY & STABILITY



Enhanced with a new guidebook and region-specific ratings, the 2016 Scorecard ventures deeper than ever to track down the latest in biotech innovation

CATEGORY QUICK GUIDE

#1 PRODUCTIVITY *Publicly traded biotechnology companies and output*

- 1.1 Public company revenues (US\$m)
- 1.2 Public companies

#2 IP PROTECTION *Quantitative and qualitative intellectual property protection*

- 2.1 Patent strength
- 2.2 Perceived IP protection

#3 INTENSITY *Effort in biotechnology innovation*

- 3.1 Public companies / million population
- 3.2 Public company employees / capita
- 3.3 Public company revenues / \$B GDP
- 3.4 Biotech patents / total patents filed with PCT
- 3.5 Value added of knowledge- and technology-intensive industries
- 3.6 Business expenditures on biotechnology R&D

#4 ENTERPRISE SUPPORT *Business environment and capital availability*

- 4.1 Business friendly environment (higher = better)
- 4.2 Biotech VC, 2007 (\$mm)
- 4.3 VC availability
- 4.4 Capital availability

#5 EDUCATION/WORKFORCE *People trained in biotechnology*

- 5.1 Post-secondary science graduates / capita
- 5.2 Ph.D. graduates in life sciences per million population
- 5.3 R&D personnel per thousand employment
- 5.4 Talent retention (reciprocal of brain drain)
- 5.5 Brain gain (share of global students studying outside their country)

#6 FOUNDATIONS *Infrastructure and R&D drivers*

- 6.1 Business expenditures on R&D (% of GDP)
- 6.2 Gross domestic expenditure on R&D (% of GDP)
- 6.3 Infrastructure quality (roads, ports, electricity, etc.)
- 6.4 Entrepreneurship and opportunity

#7 POLICY & STABILITY *Government control*

- 7.1 Political stability and absence of violence/terrorism
- 7.2 Government effectiveness
- 7.3 Regulatory quality
- 7.4 Rule of law

Taiwan,

Country Rank
23 / 54

2020

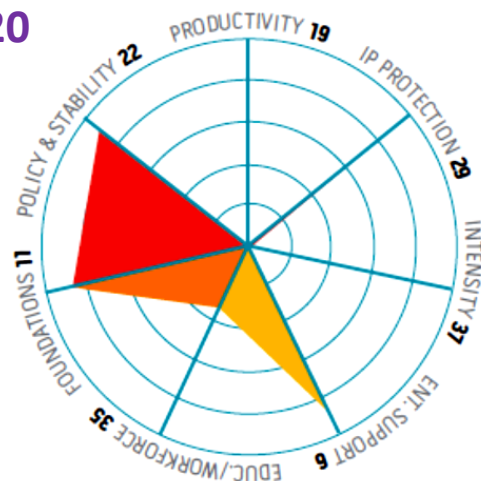
SAVV SC rank: 23

Population: 23,359,928

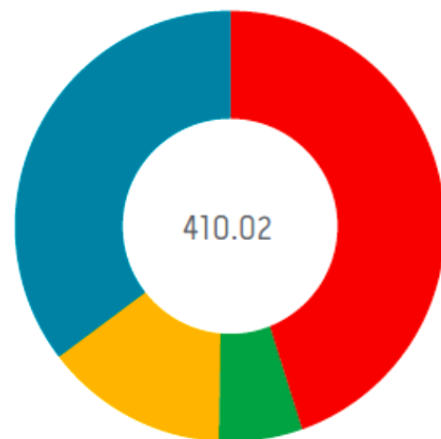
GDP: 489

R&D/GDP: 0

With an overall average of 22.4 on the SC, Taiwan's ranking of 23rd in 2016 is just about on par, and it performs even better on the *Nature Index 2015 Global*, with an 18th place overall ranking and its National Taiwan University landing in the top 100. Moreover, Taiwan advertises its biotechnology capabilities through international events, including BioTaiwan 2016. This will be the 14th annual event, and it will include presentations from companies around the world, as well as one-on-one partnering, seminars and workshops. A large exhibition is also expected, including more than 1,200 booths from 600 companies. On



August 20, 2015, *Taiwan Today* reported, "A wide-ranging development plan targeting Taiwan's biotechnology-based economy is set to kick off next year, according to Premier Mao Chi-kuo." The report continued: "Focusing on agriculture, biomedicine, food, health care and medical instruments, the 10 year initiative will potentially expand the scale of the local bioeconomy to



NT\$4 trillion (US\$123.2 billion) in 2026." With respectable scores on the SC's Foundations and Enterprise Support categories, Taiwan's commitment to innovation is clear. Like many other countries, however, Taiwan's Education/Workforce category shows room for improvement.

2016 Scientific American Worldview -A Global Biotechnology Perspective

Asian Countries' Performance

Country	Global Ranking	Productivity	IP Protection	Intensity	Enterprise Support	Education/ Workforce	Foundations	Policy & Stability
Singapore	2	---	8.3	3.8	9.2	4.5	6.6	9.6
Hong Kong	11	0.0	7.1	1.6	8.6	1.6	6.7	9.0
Japan	15	0.1	9.2	0.6	4.5	3.6	7.9	8.0
Taiwan (Score/Rank)	23	0.0/19	5.8/29	0.1/37	7.0/6	2.6/35	6.9/11	7.2/22
South Korea	24	---	5.6	0.6	4.8	3.9	8.3	6.3
Malaysia	27	---	5.5	1.1	8.0	2.1	4.9	5.9
China	41	0.1	4.7	0.6	4.5	1.3	4.0	2.9
Thailand	45	---	2.3	3.0	3.4	2.7	3.0	1.8
India	49	0.0	4.3	0.8	3.5	0.2	1.6	2.0

Source: 2016 Scientific American Worldview