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# THE EUROPEAN UNION, TAIWAN AND GLOBAL SUPPLY CHAIN SECURITY

*IMPACT ASSESSMENT/SCOPING STUDY FOR  
AN EU-TAIWAN RESILIENT SUPPLY CHAINS  
AGREEMENT*

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Impact assessment/scoping study for an EU-Taiwan Resilient  
Supply Chains Agreement

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# TABLE OF CONTENTS

1. Introduction	5
2. Why a Resilient Supply Chain Agreement with Taiwan?	7
2.1 The Economic Imperative	7
2.2 The Normative Imperative	10
2.3 Intermediate Conclusion	12
3. Existing Supply Chain Agreements, Regional Initiatives, and Bilateral Framework	13
3.1 Existing Supply Chain Agreements and Initiatives	13
3.2 Taiwan as a Key Player in Current Global and Regional Initiatives	14
3.3 Existing Framework for EU Taiwan Investment and Supply Chain Relations	16
3.4 Intermediate Conclusion and Action Points	18
4. Chapters and Contents for a RSCA with Taiwan	20
4.1 Technical Contents	20
4.2 Normative Contents	20
4.3 Intermediate Conclusion and Action Points	21
5. Where do we stand? Trade Patterns and Sectors of Strategic Significance	22
5.1 Taiwan-EU Trade	22
5.2 Sectors of Strategic Significance	24
5.3 Intermediate Conclusion and Action Points	29

6. Where to start? How to start? Priority sectors and possible first steps for a RSCA with Taiwan	30
6.1 Launch Pad (1): Semiconductors	30
6.2 Launch Pad (2): Green Energy	34
6.3 Launch Pad (3): Global Health	40
7. Conclusion: Strategic Risks and Policy Recommendations	50
7.1 Strategic Risks	50
7.2 Policy Recommendations	52
8. Annex: EU-Taiwan Trade Tables	59

# 1. INTRODUCTION

Supply chain resilience has become a major challenge for the European Union (EU) and its member states. The EU has conducted a review of its strategic dependencies and has started to develop new policies. At the same time, the EU is redefining its global role and its relations with various countries and regions including the Indo-Pacific. One of the actors that until recently has been at the fringes of EU policies has been Taiwan. Yet based on its technological leadership in advanced semiconductors, this democratic, pluralistic, and economically highly successful island should play a core role in Europe's quest to improve the resilience of its supply chains.

Taiwan's political and economic situation has been and continues to be extremely challenging due to the unresolved conflict with the government of the People's Republic of China (China). China considers Taiwan a Chinese province and insists on global recognition of the "One-China-Principle" preventing the majority of states as well as the European Union from acknowledging Taiwan as a sovereign state. This had a negative effect on the evolution of EU relations with Taiwan. There is a basic network of political, societal, and economic ties between the two sides. The existing relations do not, however, reflect the technological and economic significance of Taiwan for the European Union.

Seeking deeper and broader collaboration with Taiwan within the EU's "One-China-Policy", allowing a level of cooperation which is much more intense than Beijing would want to see, has become a necessity. Therefore bi-lateral collaboration offers a promising venue to improve supply chain resilience, advances the EU's technological and economic prowess and substantiates its role as global actor in and beyond the Indo-Pacific. To better integrate Taiwan into global supply chains serves several EU objectives: supply chain resilience, strategic sovereignty, and preservation of a rule-based global order. The EU should aspire to collaborate with Taiwan and other actors in a spirit of "like-mindedness" that seeks solutions for significant specific problems.

Based on an analysis of recent legislation, relevant policies and global developments, this study explores the potential of making EU supply chains more resilient by complementing the existing web of EU-Taiwan relations with an *EU-Taiwan Resilient Supply Chain Agreement (RSCA)*.

## 2. WHY A RESILIENT SUPPLY CHAIN AGREEMENT WITH TAIWAN?

### 2.1 THE ECONOMIC IMPERATIVE

Both sides, the EU and Taiwan, need to make their supply chains more resilient and find sustainable patterns for preserving growth and realizing a green transformation of their economies and societies. In 2018, the EU published “Connecting Europe and Asia - Building Blocks for an EU strategy”. It observed, “(t)he world depends increasingly on sophisticated data networks and transfers, energy connections, perfectly timed value chains and the mobility of people”.<sup>1</sup> But, in spite of Taiwan’s prominence in the production of semiconductors, the communication did not explicitly refer to Taiwan nor did it elaborate on global supply chains.

The EU enacts the “One-China-Policy”. At the same time, the EU is concerned with the increasing tensions in East Asia in general and across the Taiwan Strait in particular. The EU has started to rethink global supply chain resilience. In its Indo-Pacific Strategy, the EU announces that it “will foster dialogue with likeminded countries of the Indo-Pacific region by crafting forward-looking growth-enhancement strategies for a resilient and sustainable rebound of our economies. Diversification of supply chains should contribute to the resilience of the European economy, especially for the most sensitive industrial ecosystems, and to the reduction of strategic dependencies on critical raw materials.”<sup>2</sup> In the crucial area of semiconductors, the Commission explicitly seeks to collaborate “with partners such as Japan, the Republic of Korea and Taiwan”.<sup>3</sup> The European Parliament sees “Taiwan at the centre stage of the technological drive”

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<sup>1</sup> European Commission (2018a), Connecting Europe and Asia - Building blocks for an EU Strategy. Joint Communication to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and The European Investment Bank. Brussels, 19.09.2018, JOIN(2018) 31 final, p4

<sup>2</sup> Council of the EU (2021a), Outcome of Proceedings. EU strategy for cooperation in the Indo-Pacific – Council conclusions (16 April 2021), 7914/21, Brussels, 16 April 2021, p7

<sup>3</sup> European Commission, High Representative of the Union for Foreign Affairs and Security Policy (2021a), The EU strategy for cooperation in the Indo-Pacific. Joint Communication to the European Parliament and the Council, Brussels, 16.9.2021 JOIN(2021) 24 final, p6

when the EU seeks to address “its own vulnerabilities, highlighting the urgency of reflecting on how to reduce its dependencies on external actors”.<sup>4</sup>

Taiwan has signed the WTO Agreement on Government Procurement, the Trade Facilitation Agreement and the Information Technology Agreement. These are all tools to ensure transparency and supply chain resilience.<sup>5</sup> They provide a basis for a rules-based further development of relations between the EU and Taiwan. As the WTO principles include commitments to a gradually freer trade without discrimination, transparency and fairness, to economic reforms and development, both actors can rely on an existing regulatory framework in the pursuit of a RSCA (see Table 3). China, the country who provides most of the externally sourced strategically sensitive products for the EU<sup>6</sup>, lags behind in complying with these WTO regulations.<sup>7</sup> Many of these products are deeply embedded in the supply chains crossing the Taiwan Straits and are thus of high importance simultaneously for Taiwan and the PRC. Making supply chains with Taiwan more resilient needs to reflect this high degree of integration between the two economies.

### ***Box 1: Embeddedness of Taiwan's Industry in Global Supply Chains***

Taiwanese industry is deeply rooted in the structures of the global division of labour and highly integrated into global value chains (GVC). According to the latest calculations of the WTO (base year 2018)

20.9% of Taiwanese gross exports correspond to domestic value

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<sup>4</sup> European Parliament (2021a), EU-Taiwan political relations and cooperation, P9\_TA(2021)0431, Official Journal of the European Union 5.5.2022, p C184/174

<sup>5</sup> The European Economic and Trade Office (2021a), Economy and Trade, [https://www.eeas.europa.eu/taiwan/european-union-and-taiwan\\_en?s=242#2788](https://www.eeas.europa.eu/taiwan/european-union-and-taiwan_en?s=242#2788) (31 October 2022)

<sup>6</sup> European Commission (2021c), “Strategic dependencies and capacities accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Updating the 2020 New Industrial Strategy”, Brussels, 5.5.2021 SWD(2021) 352 final

<sup>7</sup> European Parliament (2021b), A new China strategy. European Parliament resolution of 16 September 2021 on a new EU-China strategy (2021/2037(INI)), PA\_09(2021)0382, para 47



added contained in intermediates (goods or services) exported to a partner economy that re-exports them after further processing to a third economy as embodied in other products. (This denotes Taiwanese forward GVC participation).

39.8% of Taiwanese gross exports represent value added created in other economies that was imported as input for the production of intermediate or final goods/services in Taiwan eventually to be exported to third countries. (This denotes Taiwanese backward GVC participation).

With a GVC participation index of 60.8 (i.e. % share of GVC related value added in gross exports) Taiwan is much deeper embedded in the global value chains than Asia (44.4), Europe (48.8) and North America (37.8).

This structural set-up results in a high degree of mutual dependencies. Even in those industries in which Taiwanese companies are leaders in terms of technology and process control or pursue superior business models, there exist significant dependencies on economic players outside the country's borders. The Taiwanese economy is not self-sufficient in its central business activities. These dependencies exist both at the level of supplies of (a) technology integrated into capital goods and (b) labour-intensive or resource-intensive intermediate products. They also exist on the output side insofar as Taiwanese companies do not always manufacture finished products, but rather supply intermediate products and components that are assembled into end products at other locations and are marketed to end customers world-wide from these locations.

This feature is reflected in the percentage share of (imported) foreign value added in the Taiwanese industries' total gross exports. Over all industries, i.e. for all of manufacturing foreign value added contributes 44.8% to total exports. In chemical products it is 56.8% and in the field of computers and electronic products foreign value added constitutes 41.0% of that industry's gross exports.

These structures testify to the fact that in recent years Taiwanese industry has successfully integrated itself into the global division of labour and has evolved in accordance with the cost structures shown on the international markets. However, they also document that political risks which could abruptly sever these supply structures, were evidently hardly considered as a potential danger in investment decisions and the development of supplier networks. In fact, the dominant calculation was rather that intensive economic integration would reduce political risks since the mutual costs of interrupting economic relations would rise to prohibitive levels. However, this calculation is only viable if political decisions are made on the basis of an economic primacy. As soon as non-economic objectives dominate political decision-making, the argument loses its relevance and previously "prohibitive costs" lose their deterring character.

## 2.2 THE NORMATIVE IMPERATIVE

The EU seeks to "promote peace, prosperity, security, and the interests of Europeans across the globe".<sup>8</sup> The EU observes threats to its norms and values and draws a connection with the instability of global supply chains.<sup>9</sup> Against this background, Taiwan constitutes "a reliable and valued like-minded partner in Asia", as both sides "share common values, such as democracy, the rule of law and human rights (...) upholding multilateralism and the rules-based international order".<sup>10</sup> Since the retreat of Nationalist forces from China to Taiwan in 1949 the physical existence of Taiwan's economic, social, and political structures has been under direct threat by the military forces of the People's Republic. Taiwan underwent a successful economic modernization and democratization. Today, the Economist

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<sup>8</sup> European External Action Service (2022), About the European External Action Service, at [https://www.eeas.europa.eu/eeas/about-european-external-action-service\\_en](https://www.eeas.europa.eu/eeas/about-european-external-action-service_en) (29 October 2022)

<sup>9</sup> European Commission (2021a), p2

<sup>10</sup> European Economic and Trade Office in Taiwan (2021b), The European Union and Taiwan, at [https://www.eeas.europa.eu/taiwan/european-union-and-taiwan\\_en?s=242](https://www.eeas.europa.eu/taiwan/european-union-and-taiwan_en?s=242) (31 October 2022)

Intelligence Unit ranks Taiwan as 8th strongest democracy in the world and it scored 94/100 in the Freedom House “Freedom in the World 2021” index. Economically, it ranked on 15<sup>th</sup> place in the World Bank Ease of Doing Business Index in 2020, and 12<sup>th</sup> in the 2019 World Economic Forum’s Global Competitive Index.

In addition to the organs of the European Union, several member states aim to improve bi-lateral collaboration with Taiwan and thereby fortify crucial supply chains. Recent initiatives include:

- Lithuania allowed the establishment of a representative office in Vilnius using the term “Taiwanese Representative Office”;
- Poland inaugurated a Taiwan-Poland Inter-Parliamentary Amity Association and collaborated with Taiwan on humanitarian relief efforts in the context of the Russian war against Ukraine and set up a Poland-Taiwan working group for cooperation on semiconductors in September 2022;
- the Irish government and members of the Dail announced that they would see a greater role for Taiwan in global organizations and for further expanding bilateral economic ties;
- a delegation from the German Bundestag sought, among other things, a better understanding of Taiwanese energy and digitalization policies;
- the Czech Republic signed six Memoranda of Understanding with Taiwan in September 2022 to increase cooperation in technology, education, and culture;
- Hungary and Taiwan deepened their cooperation in autonomous driving technology;
- the regional government of Flanders signed a MoU to enhance inter-governmental cooperation.

## 2.3 INTERMEDIATE CONCLUSION

In sum, member states as well as the institutions of the European Union acknowledge that improving relations with Taiwan and deepening economic and technological cooperation serves important normative, economic, and geo-strategic objectives. As long as sovereignty issues are avoided, deeper cooperation and synergies can be achieved within the EU's existing One-China-Policy. The current level playing field guaranteed by Taiwan's WTO membership and participation in various WTO Agreements gives momentum to establish supply chain resilience through market access. This in turn allows for market opening commitments, investment liberalization and a flow of trade in crucial goods.

### 3. EXISTING SUPPLY CHAIN AGREEMENTS, REGIONAL INITIATIVES, AND BILATERAL FRAMEWORK

#### 3.1 EXISTING SUPPLY CHAIN AGREEMENTS AND INITIATIVES

The EU seeks to uphold a rule-based global trading system. In recent years, the EU has especially started to create a network of investment agreements with major partners in the Indo-Pacific. Given that supply chains tend to be highly integrated and often cover several jurisdictions, the EU should seek to ensure that a RSCA with Taiwan fits within the legal and institutional framework as defined by major agreements with ASEAN, Japan, South Korea, or the United States. Market access, a level playing field, IPR protection and enforcement as well as the establishment of effective customs inspection systems and certification of origin regimes are crucial aspects in the pursuit of creating more resilient supply chains (see 4). Recent initiatives by third countries – the United States, Japan, or South Korea among them – may motivate EU agency (also see 3.2 below).

The EU is a strong supporter of the existing rules-based multi-lateral trading system. Over the last years, however, trends of regional bloc-building have emerged and have been intensified by US-China trade conflicts, initiatives such as the Belt and Road Initiative, and as a side-effect of lockdowns and trade interruptions in the context of the global Covid-19 pandemic. “Techno-Nationalism” threatens the global division of labour in key fields of the world economy. In East Asia and the Indo-Pacific, a dense network of partially overlapping regional trade and investment agreements and initiatives such as ASEAN FTA, Regional Comprehensive Economic Partnership (RCEP), Comprehensive and Progressive Trans-Pacific Partnership (CPTPP), or the Indo-Pacific Economic Framework (IPEF) have started to reshape the landscape for supply and value chains. The resulting picture is further complicated by the fact that China and the US are not only two of the most important hubs for global value chains, but also both deeply integrated with the Taiwanese economy

and both are pressuring for safe and direct access to Taiwanese products and technology.

As a result of its precarious international legal status, Taiwan has very few bi- and multi-lateral agreements. It is a member of the WTO (2002), APEC, the Central American Bank for Economic Integration, Asian Development Bank, the Pacific Economic Cooperation Council and the Pacific Basin Economic Council. Bilateral agreements exist – or existed – with Panama (until 2017), Guatemala, Nicaragua, El Salvador (until 2018), and Honduras. In 2010, Taiwan agreed upon a Comprehensive Economic Framework Agreement (ECFA) with the PRC. Despite their limited number, these agreements allow Taiwan to have a voice in the international community, exert some policy-shaping power and gain access to negotiations that lead to the establishment of new or the modification of existing institutions. Its involvement with international and global organizations, however, does not reflect its economic significance.

### 3.2 TAIWAN AS A KEY PLAYER IN CURRENT GLOBAL AND REGIONAL INITIATIVES

The limits defined by its international legal status notwithstanding, Taiwan has become an increasingly approached partner for bi- and pluri-lateral initiatives due to the significance of its semiconductor industry. Furthermore, there is a growing consensus among several Indo-Pacific states that a deeper integration of Taiwan will help to manage the severe tensions across the Taiwan Straits. The strengthening of Taiwan's international contacts is also pro-actively promoted by Taiwanese initiatives. Taiwan's President Tsai Ing-wen launched the so-called "New Southbound Policy" (NSP) to improve its regional integration by strengthening its ties with ASEAN, South Asian countries (India, Pakistan, Sri Lanka, Bangladesh, Nepal, Bhutan) and Australia and New Zealand. The NSP seeks to "diversify Taiwan's risks and to minimize overdependence on a single market"<sup>11</sup> by intensifying economic and trade collaboration, talent exchange, resource sharing, and cultural exchanges.

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<sup>11</sup> Executive Yuan (2019), New Southbound Policy, 4 July 2019, at <https://english.ey.gov.tw/News3/9E5540D592A5FECD/2ec7ef98-ec74-47af-85f2-9624486adf49> (29 October 2019)

The integration of Taiwan's supply chains in sectors where Taiwan's industry is highly competitive with these potential partners is also one element of the NSP.

In the context of the NSP, Taiwanese government and parliament sought to increase cooperation with several other organizations and institutions. In December 2021, parliamentarians from Japan and Taiwan agreed upon stronger cooperation in the fields of economic security and supply chain resilience. Japan passed the Economic Security Bill in May 2022 and identifies collaboration with Taiwan as one important measure. Australia launched a program to make its supply chains more resilient in 2020 and has identified cooperation with Taiwan as one important option; Japan supports Taiwan's bid to join the Comprehensive and Progressive Trans-Pacific Partnership and seeks closer co-operation with Taiwan to boost economic security; South Korea has proposed to create a more systematic and profound structure for bilateral cooperation with Taiwan.

On 17<sup>th</sup> August 2022, the US and Taiwan commenced formal negotiations on a US-Taiwan Initiative on 21<sup>st</sup> Century Trade. Key contents of the initiative include trade facilitation, good regulatory practices, strong anti-corruption standards, enhancing trade between small and medium companies, deepening agricultural trade, removing discriminatory barriers to trade, digital trade, robust labour and environmental standards, and how to limit distortive practices of state-owned enterprises or non-market policies.<sup>12</sup> Following a policy of "friend-shoring", the US furthermore seeks to integrate Taiwan into its network of mini-lateral initiatives. The participation of Taiwan in the "Chip 4 Alliance" comprising South Korea and Japan as well as the US would constitute an entity that stands for 70% of the value created in the global semiconductor industry. A first preliminary meeting was held on 28<sup>th</sup> September 2022. The proposed "Chip 4 Alliance" has until now ignored the EU's interest in securing its own supply chains. The EU must therefore not miss out on these dynamics if it seeks to ensure that significant norms and standards regarding access to and exchange with key sectors of the Taiwanese economy are not set without the active involvement of European Union.

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<sup>12</sup> United States Trade Representative (2022), United States and Taiwan Commence Formal Negotiations on U.S. – Taiwan Initiative on 21<sup>st</sup> Century Trade, August 17, 2022

### 3.3 EXISTING FRAMEWORK FOR EU TAIWAN INVESTMENT AND SUPPLY CHAIN RELATIONS

The fact that the EU and Taiwan are both members of the World Trade Organization provides a basic framework for bilateral trade and investment. On the bilateral EU-Taiwan level, however, the existing framework is less developed. In 2015, the European Commission stated that “(O)perating in an increasingly integrated regional supply chain, EU investors in East Asia would benefit from a broader network of investment agreements in the region. Building on the investment provisions under negotiation with China, the EU will explore launching negotiations on investment with Hong Kong and Taiwan”.<sup>13</sup> However, there has not been a follow-up on this promise.

Both partners can build upon a set of existing mechanisms: the EU Taiwan Industrial Policy Dialogue Mechanism (since 2015); Taiwan's participation in the Enterprise Europe Network, the European Union Cluster Cooperation Platform, and the Dialogue on the Digital Economy; EU Taiwan Labour Consultation (since 2018) and the EU Taiwan Human Rights consultations. An annual EU-Taiwan occupational safety and health cooperation meeting has been scheduled and Taiwan was invited to join the 7<sup>th</sup> European Civil Protection Forum in June 2022. The EU and Taiwan hold annually bilateral trade consultations, a mid-term review, the industrial policy dialogue, the dialogue on digital economy and various sectoral working groups.<sup>14</sup> EU interests are represented in Taipei by the European Economic and Trade Office (EETO). 15 EU Member States have established their own representations in Taiwan while Taiwan has official representative offices in 19 EU Member States.<sup>15</sup> The Taiwanese government sees “solid relations (...)in areas such as trade, investment, science, research, education, culture, health, environment, climate change, circular economy, labour,

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<sup>13</sup> European Commission (2015), Trade for all. Towards a more responsible trade and investment policy, p31

<sup>14</sup> European Economic and Trade Office in Taiwan (2021a), The European Union and Taiwan. An overview of the bilateral relations between the EU and Taiwan, 26.07.21, [https://www.eeas.europa.eu/taiwan/european-union-and-taiwan\\_en?s=242#2788](https://www.eeas.europa.eu/taiwan/european-union-and-taiwan_en?s=242#2788)

<sup>15</sup> Taipei Representative Office in the EU and Belgium (2022), Relations with the European Union, Belgium and Luxembourg, 12 August 2022, at [https://www.taiwanembassy.org/be\\_en/post/115.html](https://www.taiwanembassy.org/be_en/post/115.html) (12 October 2022)



fisheries, digital economy, cyber security, human rights and gender equality".<sup>16</sup> In 2022, the bilateral dialogue on economic affairs was upgraded to ministerial level. Among the topics discussed were supply chain resilience in the semiconductors sector, offshore-wind industrial relevance program, bilateral investment relations and cooperation.<sup>17</sup>

Despite these institutional frameworks EU-Taiwan foreign direct investment (FDI) links are comparatively weak. They are weak in absolute terms as well as both economies' total FDI activity in the global system. Based on Eurostat statistics, the EU's 2019 FDI stock in Taiwan amounted to 21.9 billion Euro. The Taiwanese FDI stock in the EU did not exceed 2.5 billion Euro. In 2020, however the EU became the largest foreign direct investor in Taiwan.<sup>18</sup> Still, these data should be treated with caution as "roundtripping" capital (e.g. US FDI channelled through The Netherlands) commands a non-negligible, but unknown share. Bilateral corporate direct investment activities appear not yet to reflect the full strategic importance of bilateral economic exchanges. Further research needs to explore the factors inhibiting a greater – investment-based – interlocking of the two economies business sectors and potential measures to overcome this situation.

Some first insights on the factors inhibiting more intensive EU FDI activity in Taiwan are provided by the European Chamber of Commerce in Taiwan's (ECCT) 2022 position paper on doing business in Taiwan.<sup>19</sup> The paper enumerates a long list of issues where European investors see unwarranted and cost restrictions to their business activities in the Taiwanese economy. The ECCT identifies some sectors where Taiwan has made progress in facilitating market access for EU companies to Taiwan e.g. banking, energy storage, tax, or medical devices. Yet in several other sectors, regulatory burdens, inconsistent government policies, and other

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<sup>16</sup> *ibid.*

<sup>17</sup> See [https://www.roc-taiwan.org/be\\_en/post/12284.html](https://www.roc-taiwan.org/be_en/post/12284.html)

<sup>18</sup> European Economic and Trade Office in Taiwan (2021c), 2021 EU-Taiwan Relations, at [https://www.eetas.europa.eu/sites/default/files/2021\\_eu-taiwan\\_relations\\_brochure.pdf](https://www.eetas.europa.eu/sites/default/files/2021_eu-taiwan_relations_brochure.pdf) (31 October 2022)

<sup>19</sup> European Chamber of Commerce Taiwan (2022), 2022 Position Papers. Taiwan's Time to Shine, ECCT Secretariat, Taipei. <https://www.ecct.com.tw/file/position-papers/2022%20ECCT%20Position%20Papers.pdf> (29 October 2022)

barriers to market entry persist including insufficient access to statistical information.<sup>20</sup> The American Chamber of Commerce also criticizes the existing regulatory framework and actual conditions in Taiwan where “too much policymaking still involves creating industry regulations and standards that are unique to Taiwan and often more restrictive than those of international counterparts”.<sup>21</sup> Completing the RSCA would help the EU further improve the framework for investment and business activities in Taiwan and utilize the full potential of bilateral economic ties.

### 3.4 INTERMEDIATE CONCLUSION AND ACTION POINTS

In sum, there are several mechanisms that can facilitate negotiations of a RSCA. Yet, the bilateral institutional framework should be further developed. Taiwan takes part in regional processes redefining rules for trade and investment in the Indo-Pacific as well as with the United States. The EU must not miss out on these developments if it seeks to make its own supply chains more resilient.

#### Action Points:

- The EU risks being excluded from substantial new standard- and rule-setting initiatives including Taiwan and should urgently and actively pursue the commencement of bilateral negotiations of the RSCA with Taiwan.
- The EU should increase Taiwan’s international policy making and negotiation capacity by raising Taiwan’s international profile and position through negotiating a RSCA.
- The EU should seek to build upon Taiwan’s membership in the WTO and its own initiatives seeking to raise Taiwan’s voice as like-minded partner in global economic governance.

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<sup>20</sup> European Chamber of Commerce Taiwan (2022), 2022 Position Papers: Taiwan’s Time to Shine, at <https://www.ecct.com.tw/publications/position-papers/> (29 October 2022)

<sup>21</sup> American Chamber of Commerce, Taiwan (2022), Taiwan White Paper 2022; Taiwan Business Topics, June 2022, Vol. 52, Issue 6, p3

- The RSCA should enable trade and increase investment transparency by improving access to data of suppliers (company level) to further enhance the EU's supplier risk solutions such as Arachne. This would also allow the EU to better cooperate with Taiwan's private sector and increase bi-lateral trade on company level.

## 4. CHAPTERS AND CONTENTS FOR A RSCA WITH TAIWAN

In order to make supply chains more resilient, the EU needs to create a regulatory framework with Taiwan that supports diversification of suppliers and manufacturing partners and increasing transparency. Trade should be regulated through a framework based on WTO agreement.<sup>22</sup> This is greatly facilitated by Taiwan having signed the WTO's public procurement agreement, which constitutes an important milestone to ensure supply chain resilience because it ensures principles of transparency and non-discrimination. Taiwan has also taken further steps to improve its national economic policy framework to the requirements of the CPTPP in 2022 amending its Copyright Act, Trademark Act, and Patent Act.

### 4.1 TECHNICAL CONTENT

A RSCA should ensure transparency, regulate export restrictions and improve the regulatory framework.<sup>23</sup> The agreement should address other trade barriers, increase resilience and strengthen global markets as reliable sources for critical products.<sup>24</sup> A RSCA would allow European companies to increase their negotiating power in the complex network of global interaction and allow them to better define and assert European requirements for investment.

### 4.2 NORMATIVE CONTENT

A RSCA should reflect the EU's constitutive principles and values. Taiwan and the EU as like-minded partners share norms and values not only on

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<sup>22</sup> OECD. (2021b). Global value chains: Efficiency and risks in the context of COVID-19. doi: <https://doi.org/10.1787/67c75fdc-en>

<sup>23</sup> OECD (2021a), Fostering Economic Resilience in a World of Open and Integrated Markets Risks, Vulnerabilities and Areas for Policy Action. Paris: OECD Publishing

<sup>24</sup> OECD (2020), Seven lessons learned about digital security risk during the COVID-19 crisis. Paris: OECD Publishing Retrieved from <https://www.oecd.org/coronavirus/policy-responses/seven-lessons-learned-about-digital-security-during-the-COVID-19-crisis-e55a6b9a/>

human rights and labour rights but also on trade related issues. A RSCA should provide a framework that enables both parties to define and further strengthen their shared norms. These shared norms and values not only counter market fragmentation, but also create shared policy goals on sustainability, human rights, and labour protection.<sup>25</sup>

On 23<sup>rd</sup> February 2022 the European Commission defined rules to ensure that companies in global supply chains respect European norms.<sup>26</sup> To foster sustainable and responsible corporate behaviour, it is most crucial that the EU engages with responsible stakeholders on each level. A RSCA would ensure that Taiwanese companies report their human rights and environmental impacts on their value chains and thus incorporate European norms into corporate governance and management systems.

## 4.3 INTERMEDIATE CONCLUSION AND ACTION POINTS

To ensure supply chain resilience, the EU-Taiwan RSCA

- should address issues of market access and investment liberalization: comprehensive tariff elimination, strong market-opening commitments in services and investments, non-tariff barriers in goods trade, state-to-state dispute settlement, etc.;
- should include non-trade related issues such as labour rights and sustainable development;
- should address the concerns of SMEs in both Taiwan and the EU.<sup>27</sup>

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<sup>25</sup> OECD (2021a), op cit.

<sup>26</sup> European Commission (2022a), Directive of the European Parliament and of the Council on Corporate Sustainability Due Diligence and amending Directive (EU) 2019/1937. (COM(2022) 71 final). Brussels

<sup>27</sup> For more detailed policy recommendations see table "[\*EU Taiwan RSCA --- Key Content Overview\*](#)", 7.2

## 5. WHERE DO WE STAND? TRADE PATTERNS AND SECTORS OF STRATEGIC SIGNIFICANCE

The European Parliament (EP) defines Taiwan as an important partner “to support the EU’s agenda for its green and digital transition, (...) in particular in value chains of strategic importance, such as microelectronics, autonomous driving and artificial intelligence (AI). (...) Taiwan’s location, its critical role in global high-tech supply chains, and its democratic way of life makes it strategically important for European democracies (...) (and) there is considerable potential for increasing Taiwan’s FDI in the EU”.<sup>28</sup>

### 5.1 TAIWAN-EU TRADE

An analysis of data (see annex) following official publications of the Directorate General of Customs, Ministry of Finance, ROC reveals important insights into Taiwan’s current position in global supply chains.<sup>29</sup>

#### Structural composition and relative importance of exports to the EU for total Taiwanese exports.

The EU absorbs no more than about 7% of all Taiwanese exports (excluding re-exports), which are mostly directed towards China. China (incl. Hong Kong) absorbed 41% of all Taiwanese exports between 2017-2021.

Taiwanese exports to the EU are characterized by a very high concentration on a small number of products and product groups (see annex, Table 1). Electronic integrated circuits (product group 8542) alone constitute about 10% of all exports, while product group 85 (electrical machinery and equipment and parts thereof) commands more than one

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<sup>28</sup> EP (2021a), op. cit.

<sup>29</sup> The five-year period between 2017-2021 was deliberately chosen as reference period in order to reflect current developments in the structure of foreign trade and to minimize the distortions caused by the Covid-19 pandemic, the war in Ukraine and the associated restrictions on global freight traffic. Traded goods classification follows the Commodity Classification Code (“CCC Code”) of the Republic of China.

quarter of all Taiwanese exports to the EU. Considering only the 25 most important export goods in the CCC 4-digit classification, the share of these goods in total exports is 26.5%. Other goods commanding more than 10% of exports are products related to motorcycles and bicycles (product group 87), automatic data processing machinery (product group 84) as well as various steel products (product groups 72 and 73).

The structural composition of Taiwanese exports to the EU closely resembles Taiwan's total exports to the world (Table 2) sharing 17 identical CCC 4-digit product categories in the respective top 25. Taiwanese exports to the world are singularly dominated by electronic integrated circuits which command about one third of total export value.

#### *Structural composition and relative importance of imports to the EU for total Taiwanese exports.*

Nearly 10% of all Taiwanese imports originate in the EU (excluding re-imports). Taiwanese imports from the EU are also dominated by the semiconductor industry.<sup>30</sup> Nearly 20% of imports are constituted by machinery used for the manufacture of semiconductors and their pre-products (product group 8486). The product categories 84 (automatic data processing machinery) and 85 (electrical machinery and equipment and parts thereof) together command more than 30% of all Taiwanese imports from the EU. Adding the import of chemical elements doped for use in electronics, in the form of discs, wafers or similar forms (3818), about one third of all Taiwanese imports from the EU belong to this industry. In combination with the equally strong Taiwanese export performance in these product categories, these trade patterns signal a deep intra-industry division of labour with highly differentiated specializations in the two economies.<sup>31</sup> Other product groups of significant importance for Taiwanese imports from the EU include the automotive industry (8703,

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<sup>30</sup> For a detailed discussion of the inter-relationship between the EU and Taiwan in the global value chains of the semiconductor industry please refer to: Ciani, A., Nardo, M. (2022), The position of the EU in the semiconductor value chain: evidence on trade, foreign acquisitions, and ownership, European Commission, Ispra, 2022, JRC129035. <https://joint-research-centre.ec.europa.eu/system/files/2022-04/JRC129035.pdf> (29 October 2022)

<sup>31</sup> However, there is an even more intensive industrial entanglement with the People's Republic of China. The product groups discussed here account for over 50% of Taiwanese imports from PR China.

8708) with a share of 9.6%, the pharmaceutical and cosmetics industry (3004, 3002, 3304) with a share of 8.7%, as well as specialized instruments for medical and industrial measurements (9030, 9031, 9018) with a share of 3.1%.

Taiwanese total imports from the world mirror those from the EU with regard to the dominant role of the semiconductor industry. Imports of product categories 84 and 85 plus 3818 constitute nearly 35% of all imports. Here, however, the similarity ends. The only other product category commanding a substantial share in total exports are energy carriers (oil, gas, coal, etc.; 2701, 2709-2711) with a share of about 14%. All other product groups command only minor shares in total imports of one or less percent.

## 5.2 SECTORS OF STRATEGIC SIGNIFICANCE

Both sides, the EU and Taiwan, have identified strategic sectors or sectors where they suffer from high strategic dependence. A RSCA could help to mitigate the risks related to this constellation. The US has been a forerunner in addressing these issues. Initiatives by the United States are driving global efforts to make supply chains more resilient. Besides, the US has already commenced formal negotiations with Taiwan and has increased restrictions in trading with China in advanced technological areas.

### *Future industries as defined in Taiwan*

In recent years, the Taiwanese government has set-up two major initiatives designed to overcome existing structural weaknesses and propel the national economy into the future. The “Five plus Two” innovative industries plan outlines Taiwan’s concept for sustainable growth and development in the coming years and decades<sup>32</sup>. It focusses on the development of seven industries and projects: (1) Asia Silicon Valley; (2)

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<sup>32</sup> Taiwan Department of Information Services, Executive Yuan (2020), 5+2 innovative industries plan, <https://english.ey.gov.tw/iip/BOC195AE54832FAD>



intelligent machinery; (3) green energy, (4) biomedicine; (5) national defence and aerospace; (6) new agriculture; and (7) the circular economy.

The key areas for economic development are further specified by the “Six Core Strategic Industries” concept as outlined by the Executive Yuan in 2020.<sup>33</sup> The concept explicitly addresses expected global supply chain transformations and intends to position Taiwanese industries as a key power in a changing world economy. The core strategic industries are:

*Digital and information technology industry:* Taiwan’s policy makers see a supremacy of the nation’s information and communications technology industry that shall be maintained and further strengthened by global leadership in digital innovation.

*Cybersecurity industry:* The industry shall strengthen emerging-area defenses and build real-world simulations for high-level cybersecurity exercises as well as construct globally trusted cybersecurity systems and industrial chains.

*Medical technology and precision health industry:* Taiwanese firms are promoted to develop precision medical technologies and systems for prevention, diagnosis, therapies, treatment, and care as well as precision epidemic prevention products and control technologies.

*National defense and strategic industries:* The policy objective here is to promote self-reliance in national defense. To this effect a wholly developed defense industry supply chain shall be assembled that also positions Taiwan as an important supplier in the global aviation, ship-building, and space industrial ecosystems.

*Green and renewable energy industry:* Following up on Taiwan’s commitment to green transformation a “national team” for offshore wind power shall be established that is lined up with the Asia-Pacific wind power industrial chain.

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<sup>33</sup> Taiwan Department of Information Services, Executive Yuan (2021), Promoting the Six Core Strategic Industries, <https://english.ey.gov.tw/News/9E5540D592A5FECDD/208da633-0f71-439a-8ef6-3d1e2aea1f34> (29 October 2022)

*Strategic stockpile industries:* Motivated by the desire to guarantee the provision of key materials in times of crisis, strategic stockpile industries shall be set up that can ensure supply stability and security in the five principle areas of energy independence, basic foodstuffs, daily necessities, medical provisions, and disaster response materials, including sand and cement. Furthermore, firm control over the supply of the raw materials and inputs critical to important industries, such as semiconductor materials and equipment, and batteries powering electric vehicles, shall be maintained.

### *Future industries as defined in the EU*

The future industries defined in Taiwan feature important overlaps and strategically fits to EU policies addressing the build-up of a future oriented socio-economic system in Europe.

The EU shies away from major planning exercises explicitly declaring specific industries as “future oriented” and potential beneficiaries of governmental support. It rather defines horizontal support mechanisms and relies on the forces of competitive markets to identify viable business models for a sustainable future.<sup>34</sup> The most important direction for industrial development in the EU is provided by the concept of a “twin transition”. This twin transition towards a digital and green economy establishes the guideposts for socio-economic policy making in the EU and provides the corporate sector with an indication in which areas policy makers provide infrastructural and regulatory support for business development.<sup>35</sup> A core element of the digital transition and of efforts to improve resilience is the European Chips Act<sup>36</sup> that outlines a string of

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<sup>34</sup> European Commission (2021b), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery, Brussels, 5.5.2021, COM(2021) 350 final. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0350&from=EN>

<sup>35</sup> European Commission (2020a), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A New Industrial Strategy for Europe, Brussels, 10.3.2020, COM(2020) 102 final

<sup>36</sup> European Commission (2022b), A Chips Act for Europe. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Brussels, 8.2.2022, COM(2022) 45 final

measures to improve the quality and quantity of European production of chips.

Finally, the EU analysed its strategic capacities and the dependencies of the EU economy on foreign inputs.<sup>37</sup> This study identifies 137 products for which there exists a high dependency of the EU economy on third countries. China, representing ca. 50% of the respective import value, Vietnam and Brazil are identified as the major source economies for these goods. Identified dependencies are especially prominent in the energy intensive industries and health ecosystems (including active pharmaceutical ingredients and other health-related products) as well as in other fields critical for a successful implementation of the twin transition of a green and digital transformation. In-depth reviews conducted or planned by the European Commission indicate sectors in which the EU sees a special need for action. These include: (1) raw materials; (2) batteries; (3) active pharmaceutical ingredients; (4) hydrogen; (5) semiconductors; (6) cloud and edge technologies; (7) renewables; (8) energy storage.

The United States passed a Global Supply Chain Resilience Act and started formal negotiations of a trade and investment agreement with Taiwan. Given the practical and normative power of US-Taiwan agreements, it is important to include the US definition of strategic sectors into the process of negotiating a RSCA with Taiwan.

Table 1: Strategic Sectors as defines by the EU, Taiwan, and the United States\*

EU	Taiwan Six Core Industries	United States Global Supply Chain Resilience Act
APIs (Active Pharmaceutical Ingredients)	Digital and information technology industry	Artificial intelligence, machine learning, autonomy, and related advances.

<sup>37</sup> European Commission (2021c): Strategic dependencies and capacities. Accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery, Brussels, 5.5.2021, SWD (2021) 352 final. [https://ec.europa.eu/info/sites/default/files/swd-strategic-dependencies-capacities\\_en.pdf](https://ec.europa.eu/info/sites/default/files/swd-strategic-dependencies-capacities_en.pdf)

Batteries	Cybersecurity industry	High performance computing, semiconductors, and advanced computer hardware and software.
Hydrogen	Medical technology and precision health industry	Quantum information science and technology.
Raw Materials	National defense and strategic industries	Robotics, automation, and advanced manufacturing.
Semiconductors	Green and Renewable Energy Industry	Natural and anthropogenic disaster prevention or mitigation.
Cloud and edge technologies	Strategic Stockpile Industry (energy independence; basic foodstuffs; daily necessities; medical provisions; disaster response materials including sand and cement; raw materials and critical inputs)	Advanced communications technology, including optical transmission components.
Renewables	Improved environment built on commonly beneficial fundamentals	Biotechnology, medical technology, genomics, and synthetic biology.
Energy storage		Data storage, data management, distributed ledger technologies, and cybersecurity, including biometrics

		Advanced energy and industrial efficacy technologies, such as batteries, advanced nuclear technologies, and polysilicon for use in solar photovoltaics, including for the purposes of electric generation (consistent with section of the National Science Foundation Act of 14 1950 (42 U.S.C. 1874)).
		Advanced materials science, including composites and 2D materials and equipment, aerospace grade metals, and aerospace specific manufacturing enabling chemicals.

*\*Sequence of sectors according to respective policies of EU, Taiwan, US*

## 5.3 INTERMEDIATE CONCLUSION AND ACTION POINTS

Based on our analysis of bilateral trade flows, the political definition of strategic sectors, the existing institutional framework and Taiwan's involvement in regional and bilateral initiatives we propose

- to engage with Taiwan on negotiations of a RSCA starting with three core sectors: semiconductors, green energy, and health (including access to health data);
- to consult with representatives of other industries to learn their interests and prepare for a potential extension of negotiations.<sup>38</sup>

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<sup>38</sup> For more detailed policy recommendations see table "[EU Taiwan RSCA --- Key Content Overview](#)", 7.2.

## 6. WHERE TO START? HOW TO START? PRIORITY SECTORS AND POSSIBLE FIRST STEPS

### 6.1 LAUNCHING PAD (1): SEMICONDUCTORS

#### Why are semiconductors crucial to a EU-Taiwan RSCA?

To put it bluntly: Everyone needs Taiwanese semiconductors. Taiwan is famous for its world-leading technology in the production of the most advanced semiconductors where Taiwan Semiconductor Manufacturing Corporation has a near monopoly. Semiconductors and related products dominate EU trade relations with Taiwan which expose a deep intra-industry division of labour with highly differentiated specializations between the two economies (see above, 5.1).

Taiwan is highly integrated in regional and global supply chains. European machinery and Chinese production facilities both contribute to the success of Taiwan's semiconductor industry as do US research and know-how. In 2021, the US proposed a "Chip 4 Alliance" bringing together the US, South Korea, Japan, and Taiwan. This alliance would cover roughly 70% of global semiconductors and would incorporate global champions in memory chips (Samsung and SK Hynix), the non-memory sector (Taiwan's TSMC), and world leading semiconductor material producers and equipment makers from Japan.

#### Relevance of EU's and Taiwan's Semiconductor policies to Supply Chains – What to do?

Obviously, the EU cannot afford not to seek a much closer cooperation with Taiwan and the nascent "Chip 4 Alliance" in order to defend its position as No. 1 source of machines semiconductor and integrated circuits production (HS code 84862000) as well as other machines related to the semiconductor industry (HS code 84864000) for Taiwan. At risk is also the EU's role as Taiwan's third most important sourcing economy for machines for the production of boules or wafers (HS code 84861000).

A first scoping meeting between the prospective partners of the “Chip 4 Alliance” was already held on 28<sup>rd</sup> September 2022 in a virtual format. Even though the “Chip 4 Alliance” is planned to be constituted by befriended allies who share the overwhelming majority of the EU’s values, the exclusion of the EU from this club automatically implies reduced political influence, restricted access to chip related products – especially in times of scarcity and crisis – as well as limited participation in the advancement of technology, technological standards setting, and business model development. One gateway through which the EU could gain influence and possibly direct access to this alliance is the fact that the designated partners of a “Chip 4 Alliance” are not only locked in a cooperative relationship but are also in intense competition with each other in important sub-sectors of the value chain. They pursue different interests and goals, not the least in their relationship to China.

#### *Taiwanese firms’ diversification of production capacities*

Inter alia triggered by the US CHIPS Act, which will provide \$52 billion in incentives to support chip manufacturing, research, and workforce development in the US, Taiwan Semiconductor Manufacturing Company is investing in a 12 billion US\$ facility in Arizona. In Japan’s Kumamoto province the company will invest 8.6 billion US\$ in a plant to boost its local production capacity.

Taiwan’s eminent electronics manufacturer and major semiconductor mounting company Foxconn (Honhai) is increasingly forced by the Taiwanese government as well as new US regulatory activity to shift production out of China. In August 2022 the company was forced out of an 800 million US\$ investment in the Chinese chipmaker and foundry operator Tsinghua Unigroup as the Taiwanese government elevated the proposed investment to the national security level. A 300 million US\$ investment in Vietnam may partially substitute for this lost project. In September 2022 the company signed a 19.5 billion US\$ joint investment with Vedanta Ltd. for a semiconductor project in Gujarat province. At the same time a proposed 10 billion US\$ investment in Wisconsin, USA, however, was scaled back by more than 90%.

The EU has identified Taiwan as an important like-minded partner in its European Chips Act. Both the EU and the Taiwanese government would support investments by TSMC and other Taiwanese companies. Early explorations by TSMC into an investment in Germany have not yet led to a positive decision. In September 2022, TSMC announced that it had no concrete plans for factories in Europe. Neither has Samsung, the second company able to produce cutting-edge 5 nm microchips. While the US has already managed to attract investments from both companies, the EU is still in a process of determining the reasons why it is lagging behind.

### *Cooperation in the Field of Rare Earths*

In numerous future-oriented industries including semiconductors or wind energy (see below), rare earths (or rare earth elements, REE) and noble gases are processed as non-substitutable components or required as media in the production process. This is especially true for the semiconductor industry. In view of the fact that currently about 95% of the industrial processing of rare earths is under the control of Chinese companies, a critical dependency of the economies of Taiwan and the EU on China can be observed with regard to the supply of rare earths and noble gases. Besides, the process of extracting rare earths often involves releasing toxic chemicals into the environment including radioactive residue. Given that demand for rare earth is set to increase dramatically and that several countries – including the United States, Brazil, Mongolia, and India – have announced plans to launch extraction of rare earth elements the development of less environmentally destructive technologies are extremely important. Partnering up with Taiwan in the framework of an RSCA would provide a means to strengthen EU value propositions in this industry.

### *The RSCA as a first start to address Semiconductor issues – How?*

One conceivable measure to overcome this critical dependency would be for the EU and Taiwan to work together to build up and operate new capacities for mining and processing of strategically important rare earths



and noble gases in and with like-minded partners (or to promote corresponding entrepreneurial activities).

EU companies have extensive experience in third country cooperation, where companies from two economies combine their respective competitive advantages to jointly operate ventures in a third country. Preferred partners in the past have often been companies from Japan or the USA, for example. This can take the form of a two-sided joint venture in a third market, or it can involve other local partners. The subject of such cooperation models are usually complex, technologically demanding business areas that cannot be managed by one company alone and where market-based procurement of critical inputs is considered impossible or too risky and uncertain. In the interest of strengthening economic relations between the EU and Taiwan and stabilising critical value chains, this model of third-country cooperation lends itself to the semiconductor industry, as well as rare earths and noble gases, and other industrial fields such as microelectronics-based medical technology, the development of renewable energy, etc.

Third country cooperation could eliminate or reduce the critical supply dependency on China. Insofar as the canon of values shared by the EU and Taiwan regarding fair working conditions and sustainable environmental use is brought to bear in the context of such activities, a contribution can also be made to strengthening these values at the global level. With the establishment of value-based best practice production structures, a substantial contribution can be made to the establishment of humane and ecologically sustainable standards in a sector that still has considerable deficits in this respect.

Then the EU and Taiwan should seek closer cooperation in research and the development and promotion of clean technologies for the extraction and recycling of rare earth elements. Both share an interest in mastering these supply chains that impact modern production technologies across the board. Ideally, they would team up with like-minded partners such as the United States and seek the promotion of global social and environmental standards for the production of rare earth elements.

## Action Points

In the areas of semiconductors and rare earths, the EU should

- commence negotiations with Taiwan urgently and seek admission to the Chips 4 Alliance
- should pursue green growth, remove trade obstacles for green technology and create opportunities for environmental services in the context of processing rare earths
- promote the compliance of the Sustainable Development Goals
- explore third country investment cooperation projects to strengthen the semiconductor supply chain.<sup>39</sup>

## 6.2 LAUNCHING PAD (2): GREEN ENERGY

Making supply chains more resilient and more sustainable is an important objective of the European Union. Reliable access to sustainable energy plays a key role. Increasing the use of renewable energy, green storage and smart applications are key to greening supply chains and to improve energy security. Therefore, cooperation with Taiwan as part of the RSCA holds vast potential.<sup>40</sup>

### Why is green energy crucial to an EU-Taiwan RSCA?

Since the inauguration of President Tsai Ing-wen in 2016, Taiwan is pursuing energy policies aiming at reducing its dependency on nuclear energy and coal. Given “the shortage of self-produced energy and the dependency on imported and fossil fuel energy as high as 98% in Taiwan, the ‘Greenhouse Gas Reduction and Management Act’ promulgated in

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<sup>39</sup> For more detailed policy recommendations see table “*EU Taiwan RSCA --- Key Content Overview*”, 7.2.

<sup>40</sup> Matthew Strong (2022), CIECA sees Taiwan as strong green supply chain partner for EU, Taiwan News, 26 October 2022, at <https://www.taiwannews.com.tw/en/news/4698842> (29 October 2022)

2015 and Paris Agreement reached in UNFCCC COP21, Taiwan is bound to follow the trend of energy transition and seize this opportunity for green growth".<sup>41</sup> The EU has defined decarbonizing of its energy system as a critical element of its long-term strategy to reach carbon neutrality by 2020. The European Green Deal identifies three key principles: ensuring a secure energy supply; developing a fully integrated and digitalized energy market; and prioritizing energy efficiency and developing a power sector based on renewable sources.

### *Relevance of EU's and Taiwan's Green Energy Strategies to Supply Chains – What to do?*

Public and private actors in Taiwan have announced plans to spend around \$32 billion between 2022 and 2030 on renewable technologies, grid infrastructure and energy storage in order to meet the aim of net-zero emissions by 2050.<sup>42</sup> By 2050, the government plans to have 60% to 70% of Taiwan's power originating from renewable sources, 9% to 12% from hydrogen, and as much as 27% from fossil fuels equipped with carbon capture technology. Nuclear power should be phased out by 2025. The volume of current projects in the area of solar and wind energy is estimated at more than 80 billion Euro. European companies such as Siemens or MHI Vestas have already been awarded contracts. In the area of solar energy, Taiwan has a mature supply chain where most projects can be fully sourced locally.<sup>43</sup>

Taiwan already entertains a series of bilateral cooperation projects to support its move towards greener and more sustainable energy with the United States, Australia, Japan, Germany, the United Kingdom, and the Netherlands. These projects include among others

- the promotion of green supply chain standards such as ISO 14001 or the formation of a Taiwan-US CCUS (Carbon Capture, Utilization, and

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<sup>41</sup> Guidelines on Energy development, April 2017, p1

<sup>42</sup> Cindy Wang (2022), Taiwan vows \$32 Billion Clean Energy Spree as It Lags in Targets, Bloomberg, 30 March 2022

<sup>43</sup> US Department of Trade, International trade Administration 2022, Market Intelligence. Taiwan renewable Energy Market

Storage Industries) Alliance;<sup>44</sup>

- joint exploration of hydrogen energy development between Taiwan and Australia<sup>45</sup> or the regular Australia-Taiwan energy and minerals dialogue;
- corporate cooperation between Japan and Taiwan in the area of offshore wind generation like the cooperation between Shizen Energy (Japan) and Swancor Renewable Energy (Taiwan);
- annual Taiwan-Japan Joint Seminars on Energy Cooperation (MOEA, Bilateral Cooperation, Japan);
- energy policy and hydrogen energy are subject to cooperation between Taiwan and the Netherlands (MOEA, Bilateral Cooperation, Netherlands);
- the Taiwan-UK Renewable Energy Roundtable Meetings addressing issues of offshore wind power, ocean energy, carbon storage, or green energy saving;
- in APEC, Taiwan contributes to four expert groups on “Clean Fossil Energy” (EGCFE), “Energy Data & Analysis (EGEDA), “Energy Efficiency and Conservation” (EGEE&C), and “New and Renewable Energy Technologies” (EGNRET).<sup>46</sup>

Reducing its dependency on energy imports has a great strategic significance for Taiwan. “In 2020, an overwhelming 98% of the energy consumed in Taiwan came from overseas”.<sup>47</sup>As part of its push to expand

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<sup>44</sup> AmCham Taiwan (2022), p4

<sup>45</sup> Australian Office, Taipei (2021), Joint Media Release on Hydrogen Trade and Investment by the Australian Office, Taipei, and the Ministry of Economic Affairs, Taipei, 29 July 2021, [https://australia.org.tw/tpei/aus\\_tw\\_hydrogen\\_trade\\_investment\\_dialogue\\_joint\\_media\\_release.html](https://australia.org.tw/tpei/aus_tw_hydrogen_trade_investment_dialogue_joint_media_release.html) (29 October 2022)

<sup>46</sup> Ministry of Economic Affairs, Bureau of Energy, Energy Policies (2022), 5 July 2022, at [https://www.moeaboe.gov.tw/ECW/English/content/ContentLink2.aspx?menu\\_id=965&sub\\_menu\\_id=1519](https://www.moeaboe.gov.tw/ECW/English/content/ContentLink2.aspx?menu_id=965&sub_menu_id=1519) (31 October 2022)

<sup>47</sup> EIAS (2021), Taiwan's Energy Security: Liquefied Natural gas, renewables, and the EU, 16 June 2021

its renewable energy capacity, solar, offshore wind, biogas, onshore wind, and geothermal energy production have been particularly targeted to increase until 2025. Offshore wind energy capacity alone is planned to expand by 10GW between 2026 and 2035.<sup>48</sup> Taiwan's government actively supports external companies to invest in Taiwan and contribute to the realization of its renewable energy policy.<sup>49</sup> In the first half of 2022, Taiwanese government approved investments from Denmark (Orsted Wind Power TW Holding A/S; CI II Changfang K/S) and the Netherlands (NP Hai Long Holdings BV) in local offshore wind projects (Taipei Times, 25 August 2022).<sup>50</sup> Japanese companies acquired a 25% stake in the offshore wind power generation business of the "Formosa I" field in March 2022 – where Germany's EnBW also holds a stake. Germany's Linde is involved in Taiwan's first hydrogen refueling station to be built as a proof-of-concept station in Taiwan's Tainan. A Taiwan Fuel Cell Partnership (TFCP) was established in 2011 bringing together companies and research centers. But while Taiwanese companies export their technology, the domestic market for hydrogen fuel cells is little developed. The Taiwanese government sponsors the Industrial Technology Research Institute (ITRI) that is actively developing storage cylinders and other technologies. Yet Taiwan has difficulties meeting its ambitious targets.

Taiwan is located on the so-called 'Pacific Ring of Fire' – a horseshoe-shaped belt covering much of the rim of the Pacific Ocean famous for volcanoes and earthquakes - and is thus well positioned to take advantage of geothermal resources. In May 2022 the government announced a program to support geothermal exploration and drilling. Several new installations are explored, planned, or under construction such as a new geothermal power plant close to New Taipei.

In Europe, the European Commission announced the EU Solar Energy Strategy in 2022: "Massive, rapid development of renewable energy is at

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<sup>48</sup> MOEA, Bureau of Energy (2019), Lüneng qianzhan yongxu Taiwan, 2019/11/14, at <https://www.re.org.tw/news/more.aspx?cid=219&id=3281>

<sup>49</sup> MOEA, Bureau of Energy (2019), Lüneng qianzhan yongxu Taiwan, 2019/11/14, at <https://www.re.org.tw/news/more.aspx?cid=219&id=3281> (29 October 2022)

<sup>50</sup> "Wind farm projects drive foreign direct investment", Taipei Times, 25 August 2022, at <https://www.taipetimes.com/News/biz/archives/2022/08/25/2003784097> (29 October 2022)

the core of the REPowerEU Plan”.<sup>51</sup> “(a)s part of the REPowerEU plan, the Commission will bring together the relevant stakeholders in the renewable energy sector, including from the solar, wind, geothermal, biomass and heat pumps industries, but also from regional and national permitting authorities, to set up an EU large-scale skills partnership for onshore renewable energy, including solar energy, under the Pact for Skills.”<sup>52</sup>

“The EU industry holds strong positions in several parts of the solar PV value chain, starting with the polysilicon sector, but especially in the downstream segment, including inverter and solar trackers manufacturing or monitoring and control. European companies have also maintained a leading position in the deployment sector”.<sup>53</sup> Yet the EU seeks to improve its local manufacturing base to decrease its external dependency. As a response to the Russian war against Ukraine, the EU has formulated the objective of consuming 20 million tons of renewable hydrogen, 10 million to be produced in Europe by 2030. Regarding energy storage, the EU has identified the need to develop better and more energy storage facilities early on. But here as well as in most other sectors of clean energy “(t)echnological advancement (...) is of critical importance”.<sup>54</sup> While the EU and its member states are considered successful in developing patents and supporting start-ups, the EU falls behind other regions regarding scaling up. While wind energy is considered to be globally highly competitive, European enterprises find themselves under much global competitive pressure in the areas of solar PV, hydrogen, heat pumps, or renewable fuels.

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<sup>51</sup> European Commission (2022c), EU Solar Energy Strategy. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, SWD(2022) 148 final, Brussels, 18.5.2022, COM(2022) 221 final, p1

<sup>52</sup> European Commission (2022c), op. cit., p8

<sup>53</sup> European Commission (2022c), op. cit., p18

<sup>54</sup> European Commission (2021d), Progress on competitiveness of clean energy technologies. Report from the Commission to the European Parliament and the Council, Brussels, 26.10.2021, COM(2021) 952 final, p2

## The RSCA as a first start to address Green Energy issues – How?

The EU should therefore negotiate with Taiwan and Taiwanese companies about measures to improve market access for Taiwanese companies into the EU, joint – and in particular joint third country – production. These measures may not only have to focus on abolishing technical impediments but also address societal and political issues. As the EU has identified significant supply chain bottlenecks in the area of solar energy, it should seek the cooperation with Taiwan to address these issues. It should facilitate the stakeholders integrated into the EU REPowerEU plan as a starting point for broader exchange and collaboration with Taiwanese stakeholders. Incorporating green energy into a RSCA with Taiwan could build up on activities by the ETO including its outreach to Taiwanese NGOs in the field of green energy such as the EU-Taiwan Youth Voice Climate Forum.

### Action Points

As part of the negotiations of the RSCA, the EU and Taiwan should

- build upon relevant international documents with regard to sustainable development (e.g. recognize the relevance of pursuing the objectives of the United Nations Framework Convention on Climate Change (UNFCCC) and the goals of the Paris Agreement;
- jointly assess core risks to energy security and the transformation towards green security as part of the negotiations;
- incorporate methods to facilitate greening of supply chains like the EU Eco-Management and Audit Scheme (EMAS) into the negotiations;
- refer to the EU Solar PV Industry Alliance as an example how to integrate stakeholders;

- seek the cooperation with Vietnam and Japan and foster discussion through existing bilateral and multilateral mechanisms;
- ensure that laws and policies encourage high levels of environmental protection;
- facilitate and encourage investment in environmental goods and services;
- agree to co-operate by exchanging experiences and good practices related to environmental impact assessments in respect of investments which are likely to have significant impact on the environment.<sup>55</sup>

## 6.3 LAUNCHING PAD (3): GLOBAL HEALTH

### Why is global health crucial to a EU-Taiwan RSCA?

The Covid-19 pandemic has revealed that contemporary global supply chains are not resilient. It has also shown Taiwan's contribution to lessen the pressure on global supply chains, for example it offered data-driven solutions in the health sector. Inopportunately, Taiwan is not a member of the WHO and could thus not share its best practices and innovative solutions. Insufficient international attention has constrained Taiwan's positive impact on supply chain challenges in the health sector. As a reaction to the newly elected President Tsai Ing-wen in 2016, the PR China has increased its efforts to isolate Taiwan internationally. As a result, Taiwan has become more and more marginalized in global health governance system.

EU institutions play a leading role in safeguarding global health issues. The EU holds power to give Taiwan a voice to tackle global (health) supply chain issues. Taiwan can offer data-driven cutting-edge solutions to

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<sup>55</sup> For more detailed policy recommendations see table "[EU Taiwan RSCA --- Key Content Overview](#)", 7.2.



successfully tackle the pandemic. It has collected trust-worthy data that respects EU's universal values of data protection and human rights. Taiwan's political environment not only ensures patent rights but also enables data-exchange and joint Research and Development based on like-minded universal values and economic interests. The EU is in need of trustworthy data especially in the pharma and medical sectors. A RSCA would enable a reliable regulatory framework of data-exchange. The agreement could establish Artificial Intelligence Principles (AI) with the aim to agree on data-storage, data sharing and data management regulations. The EU could also integrate its standards as defined in EU's approach to Digital Service (including multiple acts such as Data Governance Act or Coordinated Plan on AI; also see Table 3).<sup>56</sup>

A RSCA would also support EU's and Taiwan's pharma and medical equipment sector. Taiwan has a high demand for medical equipment and technical expertise. Taiwan's imports of pharmaceutical and medical products from the EU are relatively small but already significant (see above, 5.1). To increase imports, it has implemented a fast-track licensing procedure for medical equipment. A RSCA could regulate licensing issue and ensure a regulatory framework for the pharma and medical equipment sectors. In the same vein, a RSCA could address Intellectual Property rights and help mitigate some of the shortcomings identified by the European Chamber of Commerce Taiwan in this sector.<sup>57</sup> The EU could draw on the existing acts such as CPTPP Copyright Act and the Trademark and Patent Act. A RSCA would enable the EU to ensure licensing of medical equipment based on clear, objective, and transparent rules. The RSCA could regulate that licensing requirements and procedures are openly available and transparent (see Table 3).

The US has also reacted to Taiwan's demand and has initiated intensive dialogues and political initiatives to ensure knowledge transfer and market access. The EU should intensify the relationship with Taiwan in multi-lateral dialogues with the US, Japan, South Korea, and ASEAN. There is

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<sup>56</sup> European Commission (2020b), White Paper on Artificial Intelligence - A European approach to excellence and trust. Brussels: European Union Press

<sup>57</sup> ECCT (2022), op. cit.

momentum for European investments in not only medical but also in pharmaceutical goods. The EU should build on existing structures of vaccines export and encompass its exports to other pharmaceutical products. The EU has a high demand of active pharmaceutical ingredients (APIs), a sector in which Taiwan is growing and investing. Taiwan and the EU should benefit from each other's expertise and needs and together invest in third countries to decrease an overreliance on APIs from China and India (see table 3).

### *Relevance of EU's Global Health Strategy to Supply Chains – What to do?*

Pandemics, health emergencies and weak health systems threaten the global economy<sup>58</sup> and pose a risk to global supply chains. Global health challenges and future pandemics cannot be handled without close cooperation with like-minded partners. The EU and Taiwan share the common goal to solve challenges posed by the Covid-19 pandemic. Like-minded partners are crucial to meet the EU's goal to lead global action rooted in universal values of human rights, equality, solidarity, and cooperation.<sup>59</sup>

The EU has reacted to these challenges with its new EU Global Health Strategy, which will be launched in December 2022. There have been major global shifts in global health and geopolitics since its last 2010 Global Health Strategy. Not only the current Russian aggression and the pandemic lead to the necessity to rely on like-minded partners to tackle supply chain security. The EU Global Health Policy was first defined in 2010 addressing issues in trade, finance, development aid, migration, security, climate change and environment action, research and innovation policies.<sup>60</sup> Pre-released information on the new Global Health Strategy indicate that Taiwan can play a vital role in its implementation. Stakeholder

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<sup>58</sup> World Health Organization. (2022). Health security. Overview, at [https://www.who.int/health-topics/health-security#tab=tab\\_1](https://www.who.int/health-topics/health-security#tab=tab_1) (31 October 2022)

<sup>59</sup> European Commission (2022d), Statement by Commissioners Stella Kyriakides and Jutta Urpilainen –Towards a new EU Global Health Strategy. Press release

<sup>60</sup> Council of the European Union (2010), *Council conclusions on the EU role in Global Health*. Retrieved from Brussels

consultation has shown that the strategy should include several action points (see Table 2 below). These action points are in line with the 2010 strategy. Taiwan already played a role in EU's health related issues. Taiwan-EU cooperation on public health policies can be a vehicle to support the EU's global health strategy because they complement each other on supply chain related issues such as technological innovation, personalized healthcare and medicine and digital security.

### Big Data for Global Health

Regarding resilience of pharmaceutical supply chains and the security of medicines in the EU, the EU is in need of reliable data sets. While access to trustworthy data is key to developing personalized health and care, health is part of the Digital Single Market strategy. Access to data is also improving regulation. The European Medical Agency has set up a joint Big Data Steering Group with member states agencies. Taiwan's trustworthy data and its experience in processing public and private data is a competitive advantage the EU should rely on. As indicated, Taiwan has specified "Six Core Strategic Industries" including digital and information technology industry and medical technology and precision health industry.

In sum, reliable technology, artificial intelligence, and big data is crucial to the EU's Global Health Strategy. In the European knowledge economy, the use of data will support the supply chains in the health sector. Taiwan can support the initiatives on Europe's digital future, big data, and health to improve analytics, and processing of data. Especially during the Covid-19 pandemic Taiwan has proven to generate a wide range of innovative health information products and services. Taiwan embraces private sector partners, telecommunication providers and private information technology partners. In line with the EU's universal values such as human rights and privacy protection, Taiwan collected AI based data on health-related issues, which in turn resulted in increased health protection.<sup>61</sup> Taiwan's big data resources have resulted in low infection and case-fatality rates.<sup>62</sup>

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<sup>61</sup> Ministry of Foreign Affairs of Taiwan (2021), *Tackling COVID-19 with the help of big data and AI*. Taipei: Ministry of Foreign Affairs

<sup>62</sup> Chen C, Jyan H, Chien S, Jen H, Hsu C, Lee P, . . . C, C. (2020), *Containing COVID-19 Among 627,386 Persons in Contact with the Diamond Princess Cruise Ship Passengers who Disembarked in Taiwan: Big Data Analytics*

One aim of the EU's Global Health Strategy is to rely on data-driven innovations to address health issues. To meet this goal, the EU should draw on Taiwan and further extend common platforms of knowledge sharing, exchange of good practices on improving health information systems. Taiwan can contribute to the principle of evidence-based approach on actions of pharmaceuticals and medical devices. As in the field of semiconductors, it is essential that the EU moves fast because the US has already reached out to Taiwan. The US plans to establish an Infectious Disease Monitoring Center at the American Institute in Taipei with the aim to draw on Taiwan's expertise on big data to counteract diseases.

### *Medical Instruments and Pharmaceutical Products in Global Health*

Taiwan depends on the import of medical supplies such as medical devices and medical equipment. To tackle this issue Taiwan has established a green channel for regulatory issues to ease imports from the US.<sup>63</sup> The EU is leading in medical equipment and should support Taiwan's import needs in this sector. Taiwan is a highly valued destination of bio-tech investments because of its sound industrial policies, regulations, and data reliance. These positive pre-conditions can enable joint Taiwan-EU investments in third countries to diminish overreliance on China and India.

Pharmaceutical supply chains are facing potential disruptions due to trade disputes, cyberattacks and uncoordinated stockpiling. To ensure supply chain resilience, the EU should partner with Taiwan and its biotechnology companies. Multiple Taiwan-based pharmaceutical manufacturers have established the Taiwan Pharmaceutical Alliance (TPA) to supply APIs. Based on the analysis EU-Taiwan trade data (see above 5.2), the EU's pharmaceutical industry has not fulfilled its potential in exporting to, investing in and collaborating with Taiwan. Making supply chains in the area of global health more resilient offers a promising track to improve on the current situation

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<sup>63</sup> Ministry of Health and Welfare Taiwan (2020), *The Taiwan Model for Combating COVID-19*. Taipei: Ministry of Health and Welfare Taiwan

The RSCA as a first start to address Global Health issues – the How

The EU stakeholder consultation on the 2022 Global Health Strategy has shown that there is homework to do to link all political policies and institutions to Global Health A supply chain agreement could be a starting point because Taiwan is a like-minded partner and can deliver what the EU needs. This would lead to effective action and the EU could lead by example.

The EU should further extend the EU-Taiwanese consultation schemes to utilize Taiwan’s expertise on issues related to its new Global Health Policy such as digital issues, labour issues, and disaster management. These consultation schemes will increase expertise on global health issues and strengthen the ability to engage in health analysis. In the framework of the strategy, the Commission has decided to increase the EU stockpile of medical equipment such as ventilators and protective masks. The stockpile will include intensive care medical equipment, personal protective equipment, vaccines, and therapeutics; laboratory supplies.<sup>64</sup>

Table 2 Taiwan’s potential contribution to the EU Global Health Strategy

EU Global Health Strategy Consultation Action Points	Potential Role of Taiwan
Make health issues relevant in all EU policies	Engage with Taiwan across all major fields of the EU global health strategy

<sup>64</sup> European Commission (2022e). COVID-19: Commission creates first ever rescEU stockpile of medical equipment. Press release, p1

<p>The strategy should project the universal values to the health policy; equity, solidarity and human rights</p>	<p>Taiwan as a like-minded partner has shared objectives with the EU. Taiwan is a reliable partner that can support EU's need in pharmaceuticals e.g. to collect data-based evidence to diminish health risks</p>
<p>There is a great need to enable digitalization</p>	<p>Taiwan holds a crucial position in the digital sector. The Taiwanese government has specified big data and digitalization as one of its 6 core sectors which has heavily invested in projects in Research &amp; Innovation that has resulted in extended Taiwanese technological capabilities. Taiwan was also a role-model during the Covid-19 pandemic to tackle health risks with cutting edge technologies.</p> <p>The EU should cooperate with Taiwanese companies to learn from each's innovations.</p>
<p>Shorten the gap in workforce</p>	<p>Taiwan can support to digitalize workflows and thus optimize the need in workforce. Taiwan has invested heavily in the health care sector. One of the side effects of these investments is a well-trained workforce that is also attractive to the European market.</p>

<p>Fill the gaps in global health governance</p>	<p>Taiwan is not a member of the WHO. During the pandemic it became clear that Taiwan is an important global player to counter health related issues. Thus, the EU should extend its efforts to further integrate Taiwan in the global health governance structure. To integrate Taiwan in the global structure means to give Taiwan a voice within the EU governance structure (Trade Dialogue, bi-sectoral Working Groups etc.).</p> <p>The EU rightfully took the decision to further support the European Business and Regulatory Cooperation (EBRC). It has the goal to improve regulatory cooperation between the EU and Taiwan and to increase visibility of Taiwan and European excellence.</p>
	<p>The EU has taken up a leading role to remind the WHO of increased leadership at multiple levels. The EU should extend its efforts in speaking with a stronger voice at the global level and in dialogue with third countries such as Taiwan on global health initiatives.</p>
<p>EU has to expand their partnerships across the world but in a different way, EU needs to be better with ownership and co-responsibility of really working together</p>	<p>The EU should continue to include Taiwan in its research framework programs collaboration in FP5, FP6 and FP7. Since 2003 the Taiwanese government co-funds Taiwanese researchers participating in EU framework programs. The areas of robotics, micro and nano-electronics, and ICT in general, digital security, personalized healthcare and medicine hold great potential for ownership and co-responsibility.</p>

Purposeful interaction with private actors	The EU is actively investing in Taiwan's economy. As Taiwan's largest foreign investor company-to-company relations are strong. Private companies are reliable trading partners and crucial stakeholders in the global value chain. Further interaction with Taiwan's private sector will give momentum to innovations in ICT, artificial intelligence, medical innovation, and pharmaceuticals.
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Taiwan produces high quality medical supplies. During the pandemic Taiwan donated over 50 million face masks, thermal imaging cameras, forehead thermometers, automated temperature scanning systems, personal protective equipment (PPE), rapid nucleic acid detection devices, electric hospital beds, physiologic monitors, rapid diagnostic reagents, hydroxychloroquine, and others. During the pandemic Taiwan has increased its production capacity of personal protective equipment. It relies on the latest technology to ensure supply chain and distribution channels. The EU in cooperation with Taiwan should re-enforce its economic- and knowledge- driven power to engage in joint-investment schemes in third countries. Together they can diversify supply chain risks and address overreliance issues of Chinese and Indian products.

#### Action Points:

As part of the negotiations of the RSCA, the EU and Taiwan should

- eliminate unnecessary restrictions on exports of essential medical goods to ensure access to essential goods such as Covid-19 vaccines, therapeutics, diagnostics, and related vaccine materials, and increase investments;
- ensure licensing of technology is based on market terms. Licensing requirements and procedures, qualification requirements and procedures should be based on: (a) clear; (b) objective and



transparent; (c) pre-established criteria that are made public in advance and are readily accessible;

- seek a stronger representation of Taiwan in international health forums;
- support joint research on issues of public health;
- further implement regulatory frameworks that enables secure and transparent data transfer.

## 7. STRATEGIC RISKS AND POLICY RECOMMENDATIONS

### 7.1 RISK ASSESSMENT

Given the fact that supply chains in key technological areas are highly integrated and that the PR China has a crucial position in practically all sectors identified by the EU as being of strategic importance, it is mandatory that the EU and Taiwan pursue their collaboration in an open and wherever possible multi-lateral context. The EU pursues its Taiwan policies in the context of the One-China-Policy. The EU and Taiwan share the commitment to preserving peace in the Taiwan Strait. Therefore, the biggest risk to the proposed policies rests with political decisions taken by the leadership of the PR China. The economic interests of China, however, support the perspective that there is room for substantial improvement in collaboration between the EU and Taiwan to make supply chains more resilient.

As has become clear from the above, the economies of China and Taiwan are highly interdependent and there are considerable interdependencies in various areas. These interdependencies are currently so pronounced that a disruptive unravelling of them – for example, through a military conflict – would have catastrophic consequences for the economies of both sides, and the world as a whole.

The political agency of the ruling elite in the People's Republic of China during the reform era from 1978 onwards was shaped by the primacy of economic development. This implied that all other political-ideological target parameters were subordinated to economic-technological development and national economic growth. In this environment, the high level of economic interdependence between China and Taiwan was a viable guarantee for stability between the two former opponents of the civil war. The costs of breaking up of the cross Straits division of labour were perceived as prohibitive.

However, in recent times the persistence of the primacy of economics in all Chinese politics must increasingly be questioned. In the Xi Jinping era, the ruling elite of the PRC appears to have switched to a new set of goals in which economic growth is only of secondary importance and political-ideological and geostrategic parameters have gained significant importance instead. This calls into question the validity of the 'prohibitive' character of China's close economic ties with Taiwan. The high economic interdependence alone is no longer a reliable guarantee for the maintenance of a non-violent status quo. Although the economic cost situation has not changed, it is now weighted less heavily by decision-making actors in Beijing and loses its prohibitive character in the overall view of various decision-making parameters.

In this new constellation, in order to secure stability, it is necessary to create framework conditions according to which the costs of breaking up the status quo are also raised to a prohibitively high level in the (non-economic) benefit dimensions that have recently gained in importance. Conceivable here are, for example, the loss of diplomatic influence and negotiating leeway in international organisations, the loss of political soft power and social goodwill on the international stage, the exclusion from scientific and technological cooperation, etc. These costs should ideally arise within the framework of an automatism, according to which the respective cost burden arises directly upon the occurrence of a certain event and does not have to be brought about by the discretionary decision of a third actor.

Here lies a second major risk. A deepening bipolarity of economic and political relations could see Taiwan being drawn into either a PRC-centered bloc or within a US-centered bloc. While the former would be detrimental to EU interests under the current conditions of PRC policies, the second might also entail substantial costs of adapting EU policies, norms, and standards to US policies. Given the deep division within the US polity and the resulting volatility in US policies, the EU needs to avoid a situation where access to US-Taiwan cooperation could be denied.

# 7.2 POLICY RECOMMENDATIONS

These risks should not keep the EU from pursuing RSCA negotiations with Taiwan without delay. A conclusion of the RSCA would support both the securing of the EU’s supply chains and its overriding objectives: strategic sovereignty, preservation of a rule-based global order, and support for a like-minded partner in a precarious geostrategic situation. The contents of the RSCA should include normative and technical chapters as well as specific economic or sectoral chapters. The authors suggest negotiating a RSCA starting with the sectors discussed above: semiconductors / rare earth, green energy/green supply chains, and global health including medical instruments and health specific big data under special consideration of the points and issues outlined in Table 3 (see below).

Table 3 *EU Taiwan Resilient Supply Chains Agreement --- Key Content Overview*

	<b>RSCA Key Content Overview</b>	<b>EU-Taiwan Content Resilience Supply Chain Resilience Act</b>
(1)	<b><u>Normative content</u></b> - Human rights issues - Labour rights	- Increase co-operation on universal norms & values  - Combat disinformation and promote a responsible business conduct (RBC)  - Implement soft law principles, consider recommendations and guidelines (such as those agreed at the OECD), and more informal norms and values as expressed in G7 and G20

		<ul style="list-style-type: none"> <li>- Promote responsible business practices and encourage businesses to integrate international guidelines and principles (e.g. the UN Global Compact, the UN Guiding Principles on Business and Human Rights, International Labour Organization Guidelines &amp; OECD Guidelines for Multinational Enterprises</li> <li>- Strengthen the governance of critical infrastructure and establish trust through big data &amp; EU-software infrastructure</li> <li>- Establish discussions and exchanges of views on Human- and labour rights and establish non-state stakeholders consultations on sustainable development &amp; investment practices</li> <li>- Ensure high levels of labour protection: discourage investment that reduce the levels of protection afforded in domestic labour laws.</li> <li>- Facilitate dialogue on investment-related labour issues complementary to the efforts under existing bilateral and multilateral mechanisms</li> </ul>
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(2)	<p><b><u>Technical content</u></b></p> <ul style="list-style-type: none"> <li>- Regulate bilateral trade based on joint WTO membership</li> <li>- Market access (e.g. through public procurement)</li> <li>- Market access: Investment liberalization (comprehensive tariff elimination, strong market-opening commitments in services and investments, non-tariff barriers in goods trade)</li> <li>- IPR protection &amp; Legal framework for enforcement</li> <li>- Transparency</li> <li>- Regulate export &amp; Import restrictions and other trade barriers e.g. licensing issues</li> <li>- Ensure regulatory framework</li> <li>- Intellectual Property rights (rely on CPTPP Copyright Act, Trademark Act &amp; Patent Act)</li> <li>- Dispute settlement</li> </ul>	<ul style="list-style-type: none"> <li>- Increase trade and investment transparency through digital trade (draw on existing EU-software such as risk scoring tools e.g. Arachne &amp; Olaf to ensure stake-holder transparency)</li> <li>- Eliminate unnecessary restrictions on exports of essential medical goods to ensure access to essential goods such as Covid-19 vaccines, therapeutics, diagnostics, and related vaccine materials, increase investments</li> <li>- Cooperate with private sector–implement stress tests for supply chains (include also Small- Medium Enterprises), enable regulatory framework to upstream agreements with SMEs to increase supply</li> <li>- Ensure licensing of technology is based on market terms, licensing requirements and procedures, qualification requirements and procedures should be based on: (a) clear; (b) objective and transparent; (c) pre-established, made public in advance and accessible</li> <li>- Resilience through <b>market access</b>: each Party shall ensure the enforcement of laws and regulations in a consistent and nondiscriminatory manner</li> </ul>
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		<ul style="list-style-type: none"> <li>- Implement framework to enable co-operative actions with private and public sector on:</li> <li>- Logistics &amp; transportation within the supply chain</li> <li>- Rely on existing regulatory framework of procurement</li> <li>- Ensure regulatory framework for Intellectual Property Rights</li> <li>- Establish bi- and multilateral dialogues on technical standards and regulations</li> <li>- Reinforce predictable, rules-based trade</li> <li>- Reduce unilateral trade measures</li> <li>- Strengthen the governance of <b>critical infrastructure</b> as a precondition. To ensure secure information sharing &amp; develop cost-sharing mechanisms</li> <li>- Cooperate with Taiwan to rely on third countries to ensure the supply of critical minerals for everyday technology to decrease overreliance on China</li> <li>- Establish Artificial Intelligence (AI)</li> </ul>
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		<p>Principles (focus on data storage, data-sharing, data storage &amp; data management)</p> <ul style="list-style-type: none"> <li>- Cooperate to ensure cybersecurity</li> <li>- <b>Dispute settlement:</b> Establish an effective and efficient mechanism for avoiding and settling any disputes between the Parties</li> </ul>
(3)	<p><b><u>Investment and Sustainable Development</u></b></p> <ul style="list-style-type: none"> <li>- Green growth, remove trade obstacles for green technology and create opportunities for environmental services</li> <li>- Promote the compliance of the Sustainable Development Goals</li> <li>- Consider the Environmental impact of trade &amp; investments</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce the environmental impacts on value chains</li> <li>- Recall relevant international documents with regard to sustainable development (e.g. recognize the relevance of pursuing the objectives of the United Nations Framework Convention on Climate Change (UNFCCC) &amp; goals of the Paris Agreement</li> <li>- The Parties shall recognize the important contribution of Corporate Social Responsibility or Responsible Business Conduct to reinforce the positive role of investments in sustainable growth</li> </ul>



(3)		<ul style="list-style-type: none"> <li>- Implement regular discussions and exchanges of views on the elements sustainability, implement stakeholders consultation where non-state actors can present their views</li> <li>- Foster discussion through existing bilateral and multilateral mechanisms.</li> <li>- Ensure that laws and policies encourage high levels of environmental protection</li> <li>- To increase investments to the goal of sustainable development Taiwan and the EU should facilitate and encourage investment in environmental goods and services,</li> <li>- Taiwan and the EU should agree to co-operate by exchanging experiences and good practices related to environmental impact assessments in respect of investments which are likely to have significant impact on the environment</li> </ul>
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Based on our analysis of current trade patterns, the global environment, the existing bilateral framework, and the strategic plans of both actors the EU's next steps to conclude the RSCA should be guided by

→ adherence to its One-China-Policy;

- leveraging the EU's strength as a major global power;
- building broad support within the different services of the EU's institutions including DG Trade, EEAS, DG Research among others;
- creating specific programs for joint research, training, and education;
- embedding the negotiations of the RSCA in existing multi-lateral structures and initiatives;
- strengthening cooperation with like-minded partners.

In a rapidly changing global environment the European Union and Taiwan share fundamental norms and values. They pursue joint economic interests in their quest for green transformation. They need to act swiftly and decisively.

## 8. ANNEX: TAIWAN EU TRADE

Table 1: Taiwanese Exports to EU: Top 25 goods according to CCC 4-digit classification in US\$				
CCC CODE	CODE_NAME	2017/01 - 2021/12	RANKING	SHARE( %)
<b>TOTAL</b>	<b>EU (CCC_CODE: ALL)</b>	<b>119.049.308.406</b>	<b>---</b>	<b>100</b>
8542	Electronic integrated circuits	11.976.902.227	1	10.060
8714	Parts and accessories of vehicles of headings 87.11 to 87.13	7.678.240.876	2	6.450
7318	Screws, bolts, nuts, coach screws, screw hooks, rivets, cotters, cotter-pins, washers (including spring washers) and similar articles, of iron or steel	6.254.437.756	3	5.254
8473	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with machines of headings 84.70 to 84.72	5.576.982.752	4	4.685
8471	Automatic data processing machines and units thereof; magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, not elsewhere specified or included	5.195.444.299	5	4.364
8517	Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network (such as a local or wide area	4.766.090.024	6	4.003

	network), other than transmission or reception apparatus of heading 84.43, 85.25, 85.27 or 85.28			
8529	Parts suitable for use solely or principally with the apparatus of headings 85.25 to 85.28	3.438.587.099	7	2.888
8523	Discs, tapes, solid-state non-volatile storage devices, smart cards and other media for the recording of sound or of other phenomena, whether or not recorded, including matrices and masters for the production of discs, but excluding products of Chapter 37	3.321.172.189	8	2.790
8711	Motorcycles (including mopeds) and cycles fitted with an auxiliary motor, with or without side-cars; side-cars	2.638.648.934	9	2.216
8708	Parts and accessories of the motor vehicles of headings 87.01 to 87.05	2.460.155.179	10	2.067
7219	Flat-rolled products of stainless steel, of a width of 600 mm or more	2.392.430.822	11	2.010
7210	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, clad, plated or coated	1.968.042.500	12	1.653
8712	Bicycles and other cycles (including delivery tricycles), not motorised	1.938.421.879	13	1.628
8534	Printed circuit	1.681.178.088	14	1.412
8541	Diodes, transistors and similar semiconductor devices; photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light-emitting diodes (LED); mounted piezo-electric crystals	1.496.569.949	15	1.257
7208	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, hot-rolled, not clad, plated or coated	1.352.455.247	16	1.136

3926	Other articles of plastics and articles of other materials of headings 39.01 to 39.14.	1.342.198.942	17	1.127
9506	Articles and equipment for general physical exercise, gymnastics, athletics, other sports (including table-tennis) or outdoor games, not specified or included elsewhere in this Chapter; swimming pools and paddling pools	1.304.416.505	18	1.096
8205	Hand tools (including glaziers' diamonds), not elsewhere specified or included; blow lamps; vices, clamps and the like, other than accessories for and parts of, machine-tools or water-jet cutting machines; anvils; portable forges; hand- or pedal-operated grinding wheels with frameworks	1.291.393.878	19	1.085
8512	Electrical lighting or signalling equipment (excluding articles of heading 85.39), windscreen wipers, defrosters and demisters, of a kind used for cycles or motor vehicles	1.240.007.386	20	1.042
8504	Electrical transformers, static converters (for example, rectifiers) and inductors	1.239.821.969	21	1.041
3907	Polyacetals, other polyethers and epoxide resins, in primary forms; polycarbonates, alkyd resins, polyallyl esters and other polyesters, in primary forms	1.230.421.526	22	1.034
8457	Machining centres, unit construction machines (single station) and multi-station transfer machines, for working metal	1.223.949.964	23	1.028

8536	Electrical apparatus for switching or protecting electrical circuits, or for making connections to or in electrical circuits (for example, switches, relays, fuses, surge suppressors, plugs, sockets, lamp-holders and other connectors, junction boxes), for a voltage not exceeding 1,000 volts; connectors for optical fibres, optical fibre bundles or cables.	1.195.988.097	24	1.005
8525	Transmission apparatus for radio-broadcasting or television, whether or not incorporating reception apparatus or sound recording or reproducing apparatus; television cameras, digital cameras and video camera recorders	1.187.335.163	25	0.997
<b>Sub_T otal</b>		<b>75.391.293.250</b>	<b>--</b>	<b>63.328</b>
<b>Other s</b>		<b>43.658.015.156</b>	<b>---</b>	<b>36.672</b>

<b>Table 2: Taiwanese Exports to the World: Top 25 goods according to CCC 4-digit classification in US\$</b>				
CCC CODE	CODE_NAME	2017/01 - 2021/12	RANKING	SHARE (%)
<b>TOTAL</b>	<b>Global-Continental (CCC_CODE: ALL)</b>	<b>1.634.699.252.824</b>	<b>---</b>	<b>100</b>
8542	Electronic integrated circuits	526.833.080.808	1	32,228
8473	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with machines of headings 84,70 to 84,72	49.467.036.875	2	3,026

2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70% or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations; waste oils	45.355.205.435	3	2,775
8471	Automatic data processing machines and units thereof; magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, not elsewhere specified or included	39.572.319.486	4	2,421
9013	Liquid crystal devices not constituting articles provided for more specifically in other headings; lasers, other than laser diodes; other optical appliances and instruments, not specified or included elsewhere in this Chapter	36.379.474.310	5	2,225
8517	Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network (such as a local or wide area network), other than transmission or reception apparatus of heading 84,43, 85,25, 85,27 or 85,28	35.862.063.222	6	2,194

8523	Discs, tapes, solid-state non-volatile storage devices, smart cards and other media for the recording of sound or of other phenomena, whether or not recorded, including matrices and masters for the production of discs, but excl. products of Chapter 37	35.491.405.086	7	2,171
8529	Parts suitable for use solely or principally with the apparatus of headings 85,25 to 85,28	31.276.904.849	8	1,913
8534	Printed circuit	28.400.664.134	9	1,737
8541	Diodes, transistors and similar semiconductor devices; photo-sensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light-emitting diodes (LED); mounted piezo-electric crystals	22.861.756.196	10	1,399
7318	Screws, bolts, nuts, coach screws, screw hooks, rivets, cotters, cotter-pins, washers (including spring washers) and similar articles, of iron or steel	22.296.522.719	11	1,364
3907	Polyacetals, other polyethers and epoxide resins, in primary forms; polycarbonates, alkyd resins, polyallyl esters and other polyesters, in primary forms	21.938.428.306	12	1,342
8708	Parts and acc. of the motor vehicles of headings 87,01 to 87,05	20.290.222.765	13	1,241
3903	Polymers of styrene, in primary forms	17.167.656.876	14	1,050
8714	Parts and accessories of vehicles of headings 87,11 to 87,13	16.045.354.170	15	0,982



7208	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, hot-rolled, not clad, plated or coated	12.802.008.212	16	0,783
7410	Copper foil (whether or not printed or backed with paper, paperboard, plastics or similar backing materials), of a thickness (excluding any backing) not exceeding 0,15 mm	11.622.633.443	17	0,711
9506	Articles and equipment for general physical exercise, gymnastics, athletics, other sports (including table-tennis) or outdoor games, not specified or included elsewhere in this Chapter; swimming pools and paddling pools	10.830.245.737	18	0,663
9002	Lenses, prisms, mirrors and other optical elements, of any material, mounted, being parts of or fittings for instruments or apparatus, other than such elements of glass not optically worked	10.615.112.868	19	0,649
9001	Optical fibres and optical fibre bundles; optical fibre cables other than those of heading 85,44; sheets and plates of polarising material; lenses (including contact lenses), prisms, mirrors and other optical elements, of any material, unmounted, other than such elements of glass not optically worked	9.435.241.754	20	0,577
2902	Cyclic hydrocarbons	9.397.080.835	21	0,575
7219	Flat-rolled products of stainless steel, of a width of 600 mm or more	9.190.939.028	22	0,562

3926	Other articles of plastics and articles of other materials of headings 39,01 to 39,14,	9.100.479.754	23	0,557
3920	Other plates, sheets, film, foil and strip, of plastics, non-cellular and not reinforced, laminated, supported or similarly combined with other materials	8.834.640.966	24	0,540
7210	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, clad, plated or coated	8.692.192.653	25	0,532
<b>Sub_Total</b>		<b>1.049.758.670.487</b>	<b>--</b>	<b>64,217</b>
<b>Others</b>		<b>584.940.582.337</b>	<b>---</b>	<b>35,783</b>

**Table 3: Taiwanese Imports from EU: Top 25 goods according to CCC 4-digit classification in US\$**

CCC CODE	CODE_NAME	2017/01 - 2021/12	RANKING	SHARE (%)
<b>TOTAL</b>	<b>EU (CCC_CODE: ALL)</b>	<b>144.866.947.424</b>	<b>---</b>	<b>100</b>
8486	Machines and apparatus of a kind used solely or principally for the manufacture of semiconductor boules or wafers, semiconductor devices, electronic integrated circuits or flat panel displays; machines and apparatus specified in Note 9(C) to this Chapter; parts and accessories.	28.073.228.174	1	19.379

8703	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading 87.02), including station wagons and racing cars	12.489.566.703	2	8.621
8542	Electronic integrated circuits	9.795.395.114	3	6.762
3004	Medicaments (excluding goods of heading 30.02, 30.05 or 30.06) consisting of mixed or unmixed products for therapeutic or prophylactic uses, put up in measured doses (including those in the form of transdermal administration systems) or in forms or packings for retail sale	8.659.729.836	4	5.978
3002	Human blood; animal blood prepared for therapeutic, prophylactic or diagnostic uses; antisera, other blood fractions and immunological products, whether or not modified or obtained by means of biotechnological processes; vaccines, toxins, cultures of micro-organisms (excluding yeasts) and similar products	2.663.939.165	5	1.839
8802	Other aircraft (for example, helicopters, aeroplanes); spacecraft (including satellites) and suborbital and spacecraft launch vehicles	2.287.464.713	6	1.579
9899	MISCELLANEOUS	2.131.362.257	7	1.471
3818	Chemical elements doped for use in electronics, in the form of discs, wafers or similar forms; chemical compounds doped for use in electronics	1.930.285.950	8	1.332

4202	Trunks, suit-cases, vanity-cases, executive-cases, brief-cases, school satchels, spectacle cases, binocular cases, camera cases, musical instrument cases, gun cases, holsters and similar containers; travelling-bags, insulated food or beverages bags, toilet bags, rucksacks, handbags, shopping-bags, wallets, etc.	1.909.139.374	9	1.318
9030	Oscilloscopes, spectrum analysers and other instruments and apparatus for measuring or checking electrical quantities, excluding meters of heading 90.28; instruments and apparatus for measuring or detecting alpha, beta, gamma, X-ray, cosmic or other ionising radiations cosmic or other ionising radiations	1.838.970.859	10	1.269
9031	Measuring or checking instruments, appliances and machines, not specified or included elsewhere in this Chapter; profile projectors	1.536.459.778	11	1.061
8708	Parts and accessories of the motor vehicles of headings 87.01 to 87.05	1.485.016.432	12	1.025
8471	Automatic data processing machines and units thereof; magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, not elsewhere specified or included	1.470.042.453	13	1.015

8523	Discs, tapes, solid-state non-volatile storage devices, smart cards and other media for the recording of sound or of other phenomena, whether or not recorded, including matrices and masters for the production of discs, but excluding products of Chapter 37	1.412.275.331	14	0.975
3304	Beauty or make-up preparations and preparations for the care of the skin (other than medicaments), including sunscreen or sun tan preparations; manicure or pedicure preparations	1.293.304.676	15	0.893
8502	Electric generating sets and rotary converters	1.279.912.642	16	0.884
9018	Instruments and appliances used in medical, surgical, dental or veterinary sciences, including scintigraphic apparatus, other electro-medical apparatus and sight-testing instruments	1.180.977.119	17	0.815
8421	Centrifuges, including centrifugal dryers; filtering or purifying machinery and apparatus, for liquids or gases	1.170.923.850	18	0.808
8479	Machines and mechanical appliances having individual functions, not specified or included elsewhere in this Chapter	1.088.746.745	19	0.752
8803	Parts of goods of heading 88.01 or 88.02	1.079.941.950	20	0.745
8411	Turbo-jets, turbo-propellers and other gas turbines	1.036.383.332	21	0.715

2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70% or more of petroleum oils or of oils obtained from bituminous minerals; waste oils	1.021.987.190	22	0.705
2909	Ethers, ether-alcohols, ether-phenols, ether-alcohol-phenols, alcohol per-oxides, ether peroxides, ketone peroxides and their halogenated, sulphonated, nitrated or nitrosated derivatives	971.757.006	23	0.671
8537	Boards, panels, consoles, desks, cabinets and other bases, equipped with two or more apparatus of heading No.85.35 or 85.36, for electric control or the distribution of electricity, including those incorporating instruments or apparatus of Chapter 90, and numerical control apparatus, other than switching apparatus of heading No.85.17	945.735.957	24	0.653
7113	Article of jewellery and parts thereof, of precious metal or of metal clad with precious metal	852.447.479	25	0.588
<b>Sub_Total</b>		<b>89.604.994.085</b>	<b>--</b>	<b>61.853</b>
<b>Others</b>		<b>55.261.953.339</b>	<b>---</b>	<b>38.147</b>

**Table 4: Taiwanese Imports from World: Top 25 goods according to CCC 4-digit classification in US\$**

CCC CODE	CODE_NAME	2017/01 - 2021/12	RANKING	SHARE (%)
<b>TOTAL</b>	<b>Global-Continental (CCC_CODE: ALL)</b>	<b>1.491.628.863.274</b>	<b>---</b>	<b>100</b>

8542	Electronic integrated circuits	291.048.303.350	1	19.512
2709	Petroleum oils and oils obtained from bituminous minerals, crude	93.876.212.351	2	6.294
8486	Machines and apparatus of a kind used solely or principally for the manufacture of semiconductor boules or wafers, semiconductor devices, electronic integrated circuits or flat panel displays; machines and apparatus specified in Note 9(C) to this Chapter; parts and accessories.	87.051.088.220	3	5.836
2711	Petroleum gases and other gaseous hydrocarbons	41.769.010.056	4	2.800
2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70% or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations; waste oils	40.965.557.645	5	2.746
2701	Coal; briquettes, ovoids and similar solid fuels manufactured from coal	34.874.495.676	6	2.338
8517	Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network (such as a local or wide area network), other than transmission or reception	29.659.639.557	7	1.988

	apparatus of heading 84.43, 85.25, 85.27 or 85.28			
8703	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading 87.02), including station wagons and racing cars	28.315.671.325	8	1.898
8473	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with machines of headings 84.70 to 84.72	22.774.090.800	9	1.527
8471	Automatic data processing machines and units thereof; magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, not elsewhere specified or included	19.615.329.445	10	1.315
9030	Oscilloscopes, spectrum analysers and other instruments and apparatus for measuring or checking electrical quantities, excluding meters of heading 90.28; instruments and apparatus for measuring or detecting alpha, beta, gamma, X-ray, cosmic or other ionising radiations cosmic or other ionising radiations	19.262.208.336	11	1.291
9899	MISCELLANEOUS	18.951.432.035	12	1.271
7403	Refined copper and copper alloys, unwrought	16.653.305.605	13	1.116



3004	Medicaments (excluding goods of heading 30.02, 30.05 or 30.06) consisting of mixed or unmixed products for therapeutic or prophylactic uses, put up in measured doses (including those in the form of transdermal administration systems) or in forms or packings for retail sale	14.613.541.118	14	0.980
8541	Diodes, transistors and similar semiconductor devices; photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light-emitting diodes (LED); mounted piezo-electric crystals	14.253.253.926	15	0.956
3818	Chemical elements doped for use in electronics, in the form of discs, wafers or similar forms; chemical compounds doped for use in electronics	14.238.229.228	16	0.955
2902	Cyclic hydrocarbons	13.574.907.101	17	0.910
9031	Measuring or checking instruments, appliances and machines, not specified or included elsewhere in this Chapter; profile projectors	13.160.503.290	18	0.882
2601	Iron ores and concentrates, including roasted iron pyrites	12.361.298.564	19	0.829
8534	Printed circuit	11.478.624.291	20	0.770
8411	Turbo-jets, turbo-propellers and other gas turbines	10.208.260.257	21	0.684
8504	Electrical transformers, static converters (for example, rectifiers) and inductors	9.855.472.454	22	0.661

8523	Discs, tapes, solid-state non-volatile storage devices, smart cards and other media for the recording of sound or of other phenomena, whether or not recorded, including matrices and masters for the production of discs, but excluding products of Chapter 37	9.848.387.924	23	0.660
7219	Flat-rolled products of stainless steel, of a width of 600 mm or more	9.531.377.050	24	0.639
7207	Semi-finished products of iron or non-alloy steel	8.954.670.919	25	0.600
<b>Sub_Total</b>		<b>886.894.870.523</b>	<b>--</b>	<b>59.458</b>
<b>Others</b>		<b>604.733.992.751</b>	<b>---</b>	<b>40.542</b>



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