

# Reconfiguring Global Value Chains

Green advantage Middle East

### Contacts

#### Dubai

Dr. Yahya Anouti Partner, Strategy& Middle East +971-4-436-3000 yahya.anouti@ strategyand.pwc.com

Jayanth Mantri Manager, Strategy& Middle East +971-4-436-3000 jayanth.mantri@ strategyand.pwc.com

#### Riyadh

Georges Chehade Partner, Strategy& Middle East +966-11-249-7781 georges.chehade@ strategyand.pwc.com

Georgie Saad Principal, Strategy& Middle East +966-11-249-7781 georgie.saad@ strategyand.pwc.com

#### Vienna

Harald Dutzler Partner, Strategy& Europe +43-1-518-22-900 harald.dutzler@ strategyand.pwc.com

## About the authors

**Dr. Yahya Anouti** is a partner with Strategy& Middle East, part of the PwC network. He is a member of the energy, chemicals, and utilities practice in the Middle East. He specializes in resource-based sustainable development and energy-related strategies, and he supports governments, national oil companies, international oil companies, and utility companies in Africa, Asia, Europe, the Middle East, and the United States.

**Georges Chehade** is a partner with Strategy& Middle East. He has led the energy, chemicals and utilities practice in the Middle East and has extensive experience in energy, industrial development, and investment attraction and execution. He has 25 years of experience in leading transformation programs for large corporations and governmental entities, including strategies, restructurings and investments.

Harald Dutzler is a partner with Strategy& Europe. He leads the European operations practice. His primary focus lies in global supply chains, digitization, operations strategy, cost transformation, and organization design, and he has over 20 years of consulting experience serving clients in Asia, Europe, and the Middle East. **Georgie Saad** is a principal with Strategy& Middle East. He is a member of the energy, chemicals, and utilities practice in the Middle East. During his 15 years of strategy and operations consulting, he has focused mostly on industrial development, investment attraction, and financial sustainability, serving clients in Africa, Europe, and the Middle East.

Jayanth Mantri is a manager with Strategy& Middle East. He is a member of the energy, chemicals, and utilities practice in the Middle East. With over 11 years of experience in energy industry and strategy consulting, he focuses on sustainable industrial development, investment attraction, and supply chain localization. He has advised governments, energy and chemicals companies, and industrial majors in Africa, Europe, and the Middle East.

#### **EXECUTIVE SUMMARY**

Global value chains (GVCs) are being reconfigured, focusing less on cost and more on resilience, agility, and sustainability. This reconfiguration is upending traditional competitive advantages and creating opportunities for new manufacturing hubs. In the Middle East, the countries of the Gulf Cooperation Council (GCC)<sup>1</sup> can seize this opportunity, as they have an abundant and cost-competitive supply of green energy, a geographically attractive location, and robust industrial and logistics infrastructure, including ports and airports. Several countries are constructing greenfield megaprojects—industrial cities built around smart and circular manufacturing. Moreover, these countries have access to young talent and an increased commitment of government spending on education, research, and innovation.

Yet the opportunity could be fleeting. GCC countries must move fast to capitalize on these emerging competitive advantages and generate a new wave of economic growth. Companies are already relocating key elements of GVCs, and other countries are competing vigorously to attract them. We have identified 11 product categories in which the GCC countries possess a clear competitive advantage. By attracting manufacturing in these product categories, GCC countries could create a global connected hub and generate an estimated US\$300 billion in foreign direct investment, create 150,000 jobs, and unlock \$25 billion annually in non-oil exports, as well as potentially offset 75 million tons of CO<sub>2</sub> equivalent emissions.

Capturing the opportunity will require GCC governments to partner with one another to build multilateral value chains and join with businesses to encourage investment and competitiveness, creating the right environment for talent, innovation, and the development of the enabling infrastructure. Within a few years, GVCs will coalesce around a new set of global hubs, meaning that the region must take action now—or risk losing out.

#### **COMPETITIVE ADVANTAGES SHIFT TO THE GCC**

Global value chain (GVC) is a term for the activities required to bring a product from conception to end use, across multiple firms and geographic locations. GVCs account for 70 percent of global trade and have become a dominant feature of world trade.<sup>2</sup> However, many companies are reconsidering their approach to GVC design. Until roughly 2008, the decades-long globalization trend had pushed companies to build extremely complex structures with the primary focus of reducing cost; they had little end-to-end oversight or management. However, these GVCs are prone to disruption from exogenous factors such as pandemics, supply constraints, energy price volatility, and logistics bottlenecks (see *Exhibit 1*).

In the future, GVCs will be reconfigured to focus on resilience, agility, and sustainability. This shift creates attractive opportunities for GCC countries. Traditionally, GCC countries have been strong on forward GVC participation, in which they export basic resource-based goods (such as oil and basic chemicals) for further processing in other countries. However, they are not as active in backward GVC participation, in which countries import raw materials to produce complex components (such as semiconductors) and finished goods (such as electronics). In general, backward GVC participation has a greater impact in boosting domestic productivity. Today, Saudi Arabia has a 4 percent backward participation rate, which is very low compared with the top 15 exporting countries or regional averages (see *Exhibit 2 on page 4*).<sup>3</sup> This being the case, GCC countries should focus on developing downstream industries to manufacture complex intermediate components and finished goods to improve backward GVC participation and boost domestic productivity.



Up to Or concentration of supply of certain products in a single country <sup>1</sup>

Energy price volatility

Up to Up to times increase in European Union natural gas prices in 2022 compared with 2020<sup>2</sup>

#### **Environmental sustainability**

of the world's 2,000 largest public companies have pledged net zero by 2030 <sup>3</sup>

#### Technology advances

<u>}</u>(

Bn potential reduction in global trade due to technologies <sup>4</sup>

#### Logistical bottlenecks



Suez Canal blockage 5

Shipping industry is also highly concentrated, with a few cargo alliances controlling a majority of global container trade

Impacts on GVC design include adopting new energy sources, changing material supply sources, and redesigning products

Impacts on GVC design include

There is concentration in the solar

just a few examples

steel halted operations

photovoltaic, lithium-ion batteries and critical metals value chains, to give

Several companies in energy-inten - sive industries such as fertilizers and

For example, 3D printing will drive a more decentralized production–moving from trading

goods to trading powders

#### **EXHIBIT 2**

GCC countries need to improve their backward global value chain participation



1 South and Central America.

2 European Union plus the United Kingdom.

3 Association of Southeast Asian Nations.

Source: Trade in Value Added (TiVA), 2021 ed.: Principal Indicators, OECD Stats (https://stats.oecd.org/Index.aspx?DataSetCode=TIVA\_2021\_C1), Strategy& analysis

Instead of exporting their raw materials, GCC countries should focus on attracting downstream manufacturing to develop high-value-added end products. For example, instead of exporting hydrogen, GCC governments could develop domestic manufacturing clusters and attract industries such as green steel, ammonia, and glass manufacturing to capitalize on those local resources.

Indeed, our analysis indicates that redirecting the GCC's expected hydrogen production by 2030 to local production of green steel and ammonia could attract \$200 billion in foreign direct investment (see *Exhibit 3*).

The GCC has several advantages in the shift to greater forward GVC participation. These countries have abundant, cost-competitive energy, including green energy. Electricity tariff and gas prices have remained stable across the GCC. Current electricity prices in Saudi Arabia are one-fourth those of the E.U.; gas prices are one-tenth of the E.U. price.<sup>4</sup>

That advantage carries over into renewable energy. The GCC region has some of the lowest production costs in the world; the levelized cost of solar power is as low as 1 cent per kilowatt-hour.<sup>5</sup> Saudi Arabia has a goal of meeting 50 percent of its total energy requirements from renewable sources by 2030.<sup>6</sup> The UAE plans to generate half of its energy mix from clean and renewable energy, including nuclear power, by 2050.<sup>7</sup> By 2030, the six countries of the GCC are projected to generate 12.2 million tons of clean hydrogen each year.

#### **EXHIBIT 3**

GCC countries can generate value and investment from their green hydrogen



Note: Mt = million tons; FDI = foreign direct investment.

<sup>1</sup> Based on announced blue and green hydrogen 2030 targets by Oman, Saudi Arabia, and the United Arab Emirates, with assumed targets based on project announcements and white papers for Bahrain, Kuwait, and Qatar.

<sup>2</sup> Based on estimated new clean hydrogen demand by industry, excluding transportation and heating. Saudi Green Initiatives (https://tinyurl.com/4wtcfzta); James Burgess, "COP26: UAE Targets 25% of Global Low-Carbon Hydrogen Market by 2030," S&P Global Commodity Insights, November 4, 2021 (https:// tinyurl.com/4h2ry6yk); Walid Ahmed and Verity Ratcliffe, "Qatar to Tap Global Hydrogen Market with \$1 Billion Plant," Bloomberg, August 31, 2022 (https://tinyurl.com/5dahdsus); John Benny, "Oman Aims to Produce 1 Million Tonnes of Green Hydrogen by 2030 in Net-zero Push," *The National*, October 24, 2022 (https://tinyurl.com/3ynncrdk); Hydrogen to ammonia conversion based on Massimo Rivarolo, Gustavo Riveros-Godoy, Loredana Magistri, and Aristide F. Massardo, 2019, "Clean Hydrogen and Ammonia Synthesis in Paraguay from the Itaipu 14 GW Hydroelectric Plant," ChemEngineering 3, no. 4: 87 (https://tinyurl.com/2987nf8y); Hydrogen to Steel Conversion and Capital Expenditure per Ton of Ammonia and Steel Based on International Energy Agency, "Global Hydrogen Review: Assumptions Annex," 2022 (https://tinyurl.com/56rtd84d); Strategy& analysis.

The region was also one of the fastest to rebound from the impact of the COVID-19 pandemic. In fact, Saudi Arabia recorded the most rapid GDP growth in the G20 countries in 2022, at 8.7 percent.<sup>8</sup>

Factoring in these aspects, the cost gap between the GCC and traditional manufacturing hubs such as Germany is closing. For example, recent energy price hikes and carbon tax regulations make it more economical for European countries to import steel from the GCC region than to produce it locally. As companies decarbonize their value chains, we expect the GCC's competitive advantage to increase by 2030, due to a stable and cost-competitive supply of renewable energy required for green hydrogen (see *Exhibit 4*).

#### **EXHIBIT** 4



Landed cash cost of a steel billet in Germany (US\$/ton, 2020 prices)

The GCC can gain a cost advantage in green steel production

Note: 2015, 2020 are actuals, 2030 is Strategy& forecast. NG DRI-EAF = direct reduced iron-electric arc furnace method with natural gas as a reducing agent, BF-BOF = blast furnace-basic oxygen furnace, Green hydrogen DRI-EAF = direct reduced iron-electric arc furnace method with green hydrogen as a reducing agent.

1 Feedstock includes natural gas and coal.

2 Transportation includes shipping and customs.

3 Other costs include overhaul and maintenance and labor.

Source: Juan Correa Laguna, Jan Duerinck, Frank Meinke-Hubeny, and Joris Valee, "Carbon-free steel production: Cost reduction options and usage of existing gas infrastructure," Panel for the Future of Science and Technology, European Parliamentary Research Service, Scientific Foresight Unit, PE 690.008, April 2021 (https://tinyurl.com/bdcn67a3); European Union, Germany import tariffs, World Trade Organization (https:// tinyurl.com/5n8dd4xn); Freightos Baltic Index (FBX): Global Container Freight Index (https://fbx.freightos.com/); Carbon price for 2020 and 2030 from International Energy Agency, "Global Hydrogen Review: Assumptions Annex," 2022 (https://tinyurl.com/56rd84d); European Commission, "Quarterly Report: On European Electricity Markets," Market Observatory for Energy, *DG Energy*, Volume 15 (Issue 1, covering first quarter of 2022) (https://tinyurl.com/3a6xv3vd); World Bank Commodities Price Data (the Pink Sheet) (https://tinyurl.com/2zeuzrnt); Strategy& analysis.

#### **PRIORITY VALUE CHAINS**

Today, GCC countries should capitalize on global disruptions and take advantage of their unique value proposition to persuade global investors to manufacture in the region—along with increasing manufacturing among domestic companies. That would mitigate future disruptions, ensure competitive costs, and meet growing environmental imperatives. The GCC countries can attract GVCs and, in some cases, turn GVCs into regional or national value chains.

We have identified 11 product categories that are energy-intensive and have raw materials available in the GCC (see *Exhibit 5*). Attracting companies to manufacture these products in the GCC could generate \$300 billion in foreign direct investment, create 150,000 jobs, and unlock \$25 billion annually in non-oil exports, as well as potentially offset 75 million tons of  $CO_2$  equivalent emissions.

#### EXHIBIT 5 GCC countries have cost advantages in numerous value-added products



Source: The National Renewable Energy Laboratory, Materials Flows through Industry tool (https://mfitool.nrel.gov/my/app\_users/sign\_in); International Trade Centre, Trade Map (https://www.trademap.org); Strategy& analysis

#### ACTIONS STAKEHOLDERS CAN TAKE TO SEIZE THE OPPORTUNITY

GCC governments, sovereign wealth funds (SWFs), and private-sector players should mobilize quickly. They must initially attract manufacturing in priority product categories, and then enable the development of downstream applications in later phases. International companies are already redesigning GVCs and looking for opportunities; they will not wait for the GCC countries to be ready.

#### **GCC** governments

Designing agile, resilient, and sustainable GVCs requires constructive government-togovernment (G2G) and government-to-business (G2B) collaboration.

#### Improve G2G partnerships

Partnerships with other governments should focus on building multilateral value chains that play off each country's competitive advantages. For example, in the solar photovoltaic panel value chain, one GCC country could develop energy-intensive segments (e.g., polysilicon) while another country focuses on labor-intensive production steps (e.g., module assembly).

#### Activate G2B partnerships

GCC governments should partner with business to develop targeted measures for each priority sector that can activate investments and drive human capital development and innovation. At first, these acts should provide targeted and tiered financial incentives such as capital investment grants, subsidized inputs (such as utilities, raw materials, and rent), and subsidized financing. Incentives should be combined with demand guarantees to create a more sustainable market for participants and encourage investment. For example, in April 2022, the Saudi government signed an agreement with carmaker Lucid Group guaranteeing the purchase of at least 50,000 electric vehicles over a 10-year period.<sup>9</sup>

#### Create an agile regulatory environment

Government should also partner with the private sector to develop regulatory frameworks that will improve the ease of doing business, reduce risk, and drive growth and innovation. Consistent and stable regulations can ensure competitive neutrality between international and domestic investors. Regulations should be flexible so they can be adapted to the ever-changing competitive environment.

Additionally, countries should enact targeted regulations to drive investment in specific sectors. For example, to attract investors in plastics recycling, a growing industry with a foreseeable supply/demand imbalance and one in which GCC countries have a competitive edge, governments should enact regulations such as removing import tariffs on plastic waste and banning plastic waste exports.

#### Build a supply chain control tower

Public- and private-sector stakeholders should form a joint "control tower" that generates accurate forecasts for critical products and that measures the resiliency of those product channels. This effort would involve the public and private sectors jointly developing sourcing strategies. These strategies would enable resilient value chains through increasing in-country sourcing, diversifying sources of critical products, and securing strategic reserves.

#### Foster talent and innovation

To compete in the future, GCC governments should focus on targeted human capital development and training in line with investment ambitions and prioritized sectors. Short-term objectives should focus on partnering with global institutions to provide vocational training and skills improvement programs, especially for specialized technical labor. For example, oil and gas laborers could be easily reskilled or have their skills enhanced and redirected into renewable energy manufacturing or green hydrogen jobs.

Additionally, governments should provide incentives to companies that invest in reskilling and skills improvement programs. Governments could partner with institutions to develop new curricula. While deepening the local talent pool, GCC governments should focus on creating the right environment to attract and retain highly skilled labor from inside and outside the region.

In parallel, GCC governments should build long-term policies that focus on strengthening the research, development, and innovation (RDI) ecosystem through funding, enablement, and partnerships. RDI efforts should focus on new investors and improve the capabilities of existing ones. For example, Saudi Arabia has announced a new strategy for RDI as the country seeks to diversify its economy.<sup>10</sup> The country aspires to become a global leader in RDI with an annual investment equivalent to 2.5 percent of GDP in 2040, including health, environmental sustainability, energy, and future industries.

Build circular, smart industrial and digital infrastructure and special economic zones GCC countries should develop circular, technology-enabled industrial cities and special economic zones around priority sectors. In addition to cutting-edge infrastructure and services, these industrial clusters can offer customized regulatory and financial incentives for tenants.

## "

GCC governments should build long-term policies that focus on strengthening the research, development, and innovation (RDI) ecosystem through funding, enablement, and partnerships.

#### Sovereign wealth funds

SWFs play a vital role in creating an attractive environment for GVCs. Specific priorities include the following.

#### Secure critical raw materials

GCC countries need a secure and steady supply of critical raw materials in order to build value chains that are resilient. Specifically, GCC countries could focus on metals such as lithium, cobalt, nickel, and copper, which are all critical in enabling green industries and products (such as lithium-ion batteries) and in achieving ambitious sustainability targets. Given the limited availability of such metals in the region, SWFs can invest in large mining companies that have significant shares in multiple target metals, thus ensuring that local companies have a reliable supply.

#### Invest opportunistically in target industries

Traditionally, GCC countries have developed sectors from the bottom up. They have created state-owned enterprises and national champions, primarily in industries where the region had a clear advantage. This approach has been successful, but to compete in other, more mature industries, and to attract capabilities to the region, governments may need to identify investment targets elsewhere.

SWFs should invest in distressed global companies to gain access to proprietary technology, relocate operations to the region, and accelerate the domestic development of key value chains. The current macroeconomic environment makes this approach attractive. Given recent interest rate hikes and a looming recession, investment activity has slowed. In the fourth quarter of 2022 alone, global VC funding was down by 59 percent year on year.<sup>11</sup> That lack of liquidity could make distressed targets more eager to find a buyer, creating an opportunity for SWFs to make faster progress than they might in other market conditions.

#### The private sector

Private-sector companies in the GCC can take specific steps to increase their participation in GVCs. They can pursue joint ventures and partnerships with OEMs and their Tier One suppliers in the 11 product categories identified above in Exhibit 5. The objective of these efforts is to make less-risky investments through technology transfer and technical off-take arrangements.

#### CONCLUSION

GCC countries have the chance to become a global value chain hub across a range of industries, unlock significant economic development, and diversify the economy. However, this opportunity will not last long. Companies are already restructuring their GVCs and making decisions about where to place new facilities.

What that means is that GCC governments, sovereign wealth funds, and the private-sector players in the region must take immediate action to make the GCC region the place to be for GVCs. That requires GCC governments to improve government-to-government partnerships; activate government-to-business partnerships; create an agile regulatory environment; build supply chain control tower; foster talent and innovation; and build circular, smart industrial and digital infrastructure and special economic zones. That means that sovereign wealth funds should secure critical raw materials and invest opportunistically in target industries. For the private sector, it means increasing its involvement in GVCs, such as through joint ventures and partnerships with OEMs and their Tier One suppliers in the key product categories.

Acting collaboratively these stakeholders can position GCC countries to take advantage of shifting GVCs, thereby ensuring that the region is in the vanguard of the new global economy.

#### **ENDNOTES**

- 1. The GCC countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.
- Global Value Chains and Trade, OECD (https://www.oecd.org/trade/topics/global-valuechains-and-trade/).
- 3. OECD Stats, Forward and Backward Participation in GVCs (https://tinyurl.com/mry8sc3d).
- 4. European Commission, "Quarterly Report: On European Electricity Markets," Market Observatory for Energy, DG Energy, Volume 15 (Issue 2, covering second quarter of 2022) (https://tinyurl.com/3a6xv3vd); World Bank Commodities Price Data (the Pink Sheet) (https://tinyurl.com/2zeuzrmt); Consumption tariffs, "Table Shows the New Electricity Tariffs for All Categories of Consumption as Approved by the Council of Ministers' Decree Dated 12/12/2017, Which Has Been Applied Since 1/1/2018," Saudi Electricity Company (https:// www.se.com.sa/en-us/customers/pages/tariffrates.aspx); Walid Matar, "A Look Back on Saudi Fossil Fuel Incentives in the Last Decade," King Abdullah Petroleum Studies and Research Center, April 19, 2020 (https://www.kapsarc.org/research/publications/a-lookback-on-saudi-fossil-fuel-incentives-in-the-last-decade/).
- 5. "Saudi Arabia's Second PV Tender Draws World Record Low Bid of \$0.0104/kWh," *PV Magazine*, April 8, 2021 (https://www.pv-magazine.com/2021/04/08/saudi-arabias-second-pv-tender-draws-world-record-low-bid-of-0104-kwh/).
- 6. "The Kingdom Has Committed to Have 50% of Its Power Generated from Renewable Sources by 2030," Saudi Green Initiative (https://www.greeninitiatives.gov.sa/about-sgi/sgi-targets/reducing-emissions/reduce-carbon-emissions/).
- UAE Energy Strategy 2050, November 24, 2022 (https://u.ae/en/about-the-uae/strategiesinitiatives-and-awards/strategies-plans-and-visions/environment-and-energy/uae-energystrategy-2050).
- "Saudi Arabia to Grow at Fastest Pace in a Decade," International Monetary Fund (IMF), August 17, 2022 (https://www.imf.org/en/News/Articles/2022/08/09/CF-Saudi-Arabiato-grow-at-fastest-pace); "Saudi Arabia's Economy Expands 8.7% in 2022 on Oil Sector Boost," *The National*, February 3, 2023 (https://tinyurl.com/2e55jdt4).
- "Lucid Says Saudi Arabia Will Purchase up to 100,000 Vehicles over 10 years," Reuters, April 27, 2022 (https://www.reuters.com/business/autos-transportation/lucid-says-saudiarabia-will-purchase-up-100000-vehicles-over-10-years-2022-04-26/).

- 10. Embassy of Saudi Arabia, "Saudi Crown Prince to Prioritize Research, Development, and Innovation to Address Global Challenges," July 1, 2022 (https://tinyurl.com/5cp8c44s).
- Gené Teare, "Global Funding Slide in 2022 Sets Stage for Another Tough Year," Crunchbase News, January 5, 2023 (https://news.crunchbase.com/venture/global-vc-fundingslide-q4-2022/).



## Strategy&

Strategy& is a global strategy consulting business uniquely positioned to help deliver your best future: one that is built on differentiation from the inside out and tailored exactly to you. As part of PwC, every day we're building the winning systems that are at the heart of growth. We combine our powerful foresight with this tangible know-how, technology, and scale to help you create a better, more transformative strategy from day one.

As the only at-scale strategy business that's part of a global professional services network, we embed our strategy capabilities with frontline teams across PwC to show you where you need to go, the choices you'll need to make to get there, and how to get it right.

The result is an authentic strategy process powerful enough to capture possibility, while pragmatic enough to ensure effective delivery. It's the strategy that gets an organization through the changes of today and drives results that redefine tomorrow. It's the strategy that turns vision into reality. It's strategy, made real.

#### www.strategyand.pwc.com/me

#### **Read the latest Ideation Center insights**



www.ideationcenter.com

#### **Connect with Strategy& Middle East**

www.twitter.com/strategyandme

www.linkedin.com/company/strategyandme



www.strategyand.pwc.com/me

**Connect with Strategy&** 



www.twitter.com/strategyand

www.linkedin.com/company/strategyand

www.youtube.com/user/strategyand

© 2023 PwC. All rights reserved. PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details. Mentions of Strategy& refer to the global team of practical strategists that is integrated within the PwC network of firms. For more about Strategy&, see www.strategyand.pwc.com. No reproduction is permitted in whole or part without written permission of PwC. Disclaimer: This content is for general purposes only, and should not be used as a substitute for consultation with professional advisors.