DGAP REPORT

Germany's Global Technology Diplomacy

Strengthening International Technology Alliances, Partnerships, and Norms

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CHAPTER OVERVIEW

Key Takeaways

1 The fusion of technological, geopolitical, and ideological ambitions is straining internet governance discourses, cyber norms diplomacy, technical standard-setting, and the global connectivity infrastructure.

2 The German government has made support for global, open, and secure digital connectivity a centerpiece of its foreign policy. However, it has yet to make the shaping of a corresponding international technology agenda a strategic policy priority.

3 To shape a global technology order that reflects Germany's interests as a high-tech industrial economy and democratic society, the government should focus on realizing synergies with EU international digital policy, strengthening coordination with like-minded partners, and engaging with the Global South on an inclusive and democratic global digital agenda.

Introduction

Russia's war against Ukraine rocked Germany's stability-minded "change through trade" doctrine. The conflict consequently unleashed significant knock-on effects on Germany's technology foreign policy, which has important geopolitical and ideological dimensions. China is already pushing for technological leadership in its quest to surpass the United States as a great power by the midpoint of this century. Authoritarian regimes are also harnessing digital technology, once hailed as an enabler of civic challenges to oppression, to tighten their domestic grip on power.

The fusion of technological, geopolitical, and ideological ambitions is straining internet governance discourses, cyber norms diplomacy, technical standard-setting, and the global connectivity infrastructure. Germany must step up its international efforts and work closely with its partners and allies to counter this trend. The country must become an active shaper of a governance landscape that reflects its interests and values as a high-tech player, globalized economy, and liberal democracy.

The State of Play

At the heart of the fragmentation that is rattling international digital governance is the struggle for control over global digital connectivity. The internet's original conception as an open, global, decentralized, and multistakeholder-governed infrastructure clashes with some states' push for exclusive sovereign control over information flows and political expression. China and Russia jointly clarified that they would deem unacceptable "any attempts to limit their sovereign right to regulate national segments of the Internet and ensure their security."[1] Equally worrying is the increasing implementation of interventionist content-monitoring regimes and internet shutdowns similar to that which occurred during anti-government protests in Belarus (summer 2020),[2] Kazakhstan (winter 2021-22)[3] and Iran (fall 2022).[4]

These opposing visions translate into intensifying powerplays around the internet itself, notably within

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1   "Russia and China call for internationalization of Internet governance — statement," TASS, February 4, 2022: https://tass.com/economy/1398177 (accessed June 22, 2022).

2   Andrei Makhovsky and Tom Balmforth, "Internet blackout in Belarus leaves protesters in the dark", Reuters, August 11, 2020: https://www.reuters.com/article/us-belarus-election-internet-idUSKCN2571Q4 (accessed September 15, 2022).

3   Elizabeth Zach and Amalia Oganjanyan, "Internet blackout in Kazakhstan amid protests silenced a DW Akademie partner for nearly a week," Deutsche Welle, March 4, 2022: https://www.dw.com/en/internet-blackout-in-kazakhstan-amid-protests-silenced-a-dw-akademie-partner-for-nearly-a-week/a-61017740 (accessed September 15, 2022).

4   Matt Burgess, "Iran's Internet Shutdown Hides a Deadly Crackdown", Wired, September 23, 2022: https://www.wired.co.uk/article/iran-protests-2022-internet-shutdown-whatsapp (accessed 27.10.2022).

the bodies that administrate and develop it.[5] Democratic states of the Global North, including Germany, have responded by reaffirming their support for technical internet governance built around a cluster of multistakeholder bodies, including the Internet Society (ISOC), the Internet Corporation for Assigned Names and Numbers (ICANN),[6] and the Internet Engineering Task Force (IETF). Some are also advancing ambitious regulatory initiatives, such as the EU's Digital Markets Act, to limit large technology companies' centralization and mediation of private and corporate online activity. Importantly, democratic states are building a common political vision through the Christchurch Call for a free, open, and secure internet, the Paris Call for Stability and Security in Cyberspace, and, most recently, the Elmau G7 Resilient Democracies Statement.[7]

These efforts pit democracies against major authoritarian powers, in particular China, Russia, and Iran, that prioritize a vision based on national sovereignty and state control. Internationally, these powers are upping their efforts to shift governance functions away from multistakeholder bodies supported by Germany and its partners. Chinese company Huawei, for example, used the International Telecommunications Union (ITU) to propose a "NewIP" initiative[8] that would renew the internet protocol (IP) suite. This could not only duplicate the work of multistakeholder bodies and undermine interoperability with the existing IP architecture but, some fear, also embed greater opportunities for information control in the internet's logical layer.[9] China is also pro-

moting its cyber sovereignty agenda through parallel institution-building. A recent example is the foundation of the Wuzhen-based World Internet Conference as an international organization.[10]

These fault lines characterize international cyber norms diplomacy, too. Agreement on the OEWG's final report last year was the first time that consensus on cyber norms had been reached in a process open to all UN member states. Notably, the report included agreement on language and on recommendations for responsible state behavior that emanated from UN Governmental Groups of Expert (GGE) meetings.[11] However, differences persist, particularly on the involvement of non-governmental stakeholders and a focus on implementation, both of which Germany supports.[12] A French-Egyptian proposal, supported by Germany, for a Program of Action[13] that aims to invigorate cooperation through a permanent UN forum is at risk of fading into obscurity if not urgently advanced.

Divisions also remain in the area of cybercrime. After a decade of failed attempts, Russia secured approval in December 2019 for a UN General Assembly resolution[14] deciding the elaboration of a new cybercrime convention.[15] Negotiations on the convention commenced this year and will continue until the 78th General Assembly session in 2023.[16] But the resolution is a blow to Germany's goal of strengthening the existing Budapest Convention, and there is concern that a new convention could undermine fundamental freedoms under the pretext of tackling cyber-

5   David Hagebölling, "Internet Governance. Foreign Policy & the Backbone of the Digital Word," DGAP Memo No. 14, German Council on Foreign Relations (September 2021): https://dgap.org/sites/default/files/article_pdfs/dgap-memo-btw21_14_dh_en_0.pdf (accessed June 22, 2022).

6   The 78th ICANN Annual General Meeting will take place in Hamburg October 21-23, 2023.

7   G7 Germany, "2022 Resilient Democracies Statement," (June 27, 2022): https://www.g7germany.de/resource/blob/974430/2057608/61ed f594f5ca30fb7b2ae4b79d16f1e6/2022-06-27-g7-resilient-democracies-statement-data.pdf?download=1 (accessed 15 August 2022).

8   Huawei, "New IP-Initiative," 2022: https://www.huawei.com/de/deu/magazin/aktuelles/new-ip (accessed June 22, 2022).

9   Madhumita Murgia and Anna Gross, "Inside China's controversial mission to reinvent the internet," Financial Times, March 27, 2020: https://www.ft.com/content/ba94c2bc-6e27-11ea-9bca-bf503995cd6f (accessed June 27, 2022).

10 World Internet Conference, "Xi sends congratulatory letter to inauguration of World Internet Conference organization," (July 13, 2022): https://www.wuzhenwic.org/2022-07/13/c_788406.htm (accessed August 15, 2022).

11 United Nations General Assembly, "Open-ended working group on developments in the field of information and telecommunications in the context of international security. Final Substantive Report," A/AC.290/2021/CRP.2, March 10, 2021: https://front.un-arm.org/wp-content/uploads/2021/03/Final-report-A-AC.290-2021-CRP.2.pdf (accessed June 22, 2022).

12 Valentin Weber, "How to Strengthen the Program of Action for Advancing Responsible State Behavior in Cyberspace," Just Security, February 10, 2022: https://www.justsecurity.org/80137/how-to-strengthen-the-programme-of-action-for-advancing-responsible-state-behavior-in-cyberspace (accessed June 22, 2022).

13 Governments of France, Egypt and other states, "The future of discussions on ICTs and cyberspace at the UN," August 8, 2020: https://front.un-arm.org/wp-content/uploads/2020/10/joint-contribution-poa-future-of-cyber-discussions-at-un-10-08-2020.pdf (accessed July 27, 2022).

14 This UNGA resolution was co-sponsored by Belarus, Cambodia, China, the Democratic People's Republic of Korea, Myanmar, Nicaragua, and Venezuela. United Nations General Assembly, "Countering the use of information and communications technologies for criminal purposes. Report of the Third Committee," A/74/401, November 25, 2019: https://undocs.org/en/A/74/401 (accessed June 22, 2022).

15 United Nations General Assembly, "Countering the use of information and communications technologies for criminal purposes," A/RES/74/247, January 20, 2020: https://undocs.org/A/Res/74/247 (accessed June 22, 2022).

16 United Nations, "General Assembly Adopts Resolution Outlining Terms for Negotiating Cybercrime Treaty amid Concerns over 'Rushed' Vote at Expense of Further Consultations," May 26, 2021: https://www.un.org/press/en/2021/ga12328.doc.htm (accessed June 22, 2022).

crime.[17] Another setback came from the 14th Beijing BRICS statement of June 2022, which reaffirmed these states' support for the Ad Hoc Committee on a new cybercrime convention.[18]

The internet governance and cyber norms discourse also reflects a worrying global trend among G77+ states, many of which are democratic but position themselves between intergovernmental and multistakeholder visions of internet governance. The G7 Democratic Resilience Statement won the backing of the +5 countries (Argentina, India, Indonesia, Senegal, and South Africa) invited to Germany's Elmau summit.[19] But many of those same countries have been reluctant to place the Paris Call and the Declaration for the Future of the Internet (DFI)[20] – signed by Germany, the EU, and more than 60 countries as an effort to articulate a positive and human rights-centered vision for the internet – among the central elements of a global digital order. [21]

The rising ideological fragmentation also translates into efforts to stake out technology-infrastructural spheres of influence, particularly across the Global South. The digital component of China's Belt and Road Initiative (BRI) seeks to connect dozens of countries through Chinese fiber optic cables, satellite navigation systems, data centers, and 5G/6G network infrastructure as well as to promote technologies for smart cities and ports, predictive policing, and health data analytics.[22] This digital BRI extends a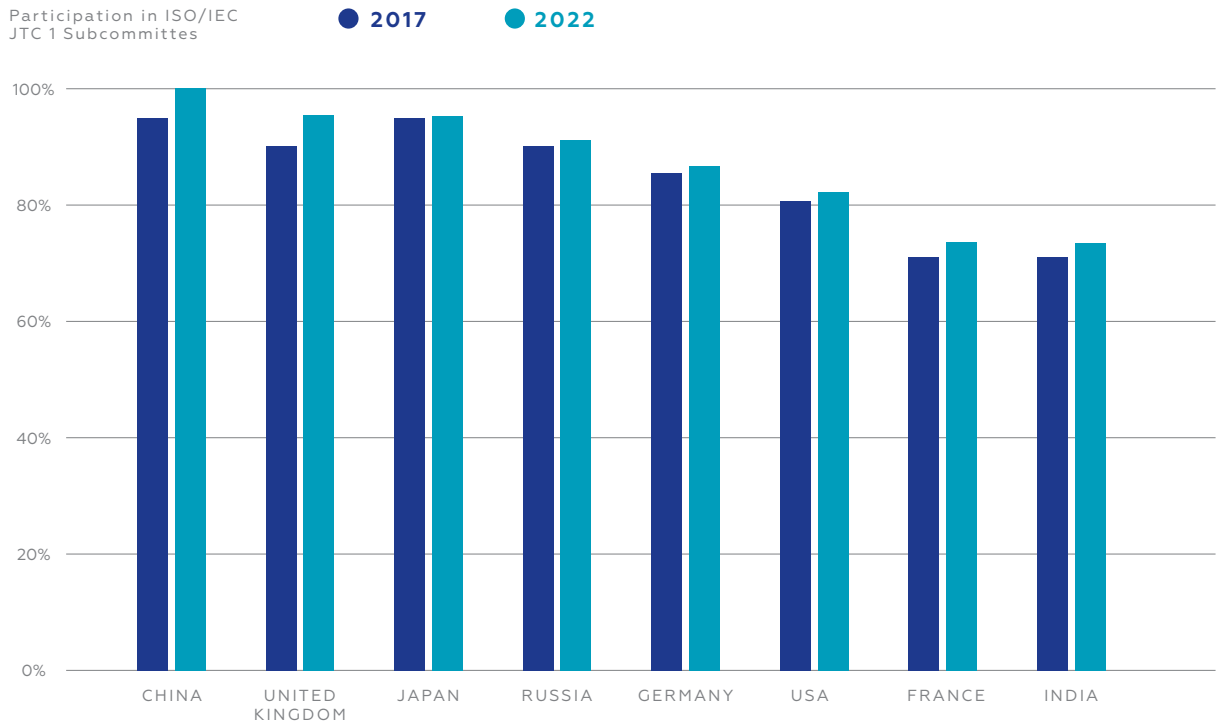cross the EU's immediate neighborhood, including the Balkans[23] and North Africa,[24] and into Germany itself, with Duisburg seen as the BRI's European endpoint.[25]

To respond to the BRI, the G7, under the German presidency, committed to collectively mobilize $600 billion in public and private investment over the coming five years through its Partnership for Global Infrastructure Investment (PGII).[26] But questions remain as to how these funds will be mobilized and, crucially, how ambitious and competitive the PGII's information and communications technology (ICT) component will be against BRI's digital component, which has already disbursed an estimated $79 billion in investments.[27] Moreover, how the PGII interlinks with the EU's €300 billion Global Gateway initiative launched in late 2021 is yet to be seen.[28] Given the challenging geopolitical context, combining various national, EU, and G7 initiatives into a coherent and competitive strategic response to China's BRI remains a key challenge for Germany and like-minded countries.

Such infrastructure geopolitics are accompanied by a relative decline in the ability of Germany and its European partners to shape global technical standards. China, especially, has been highly successful at positioning technical experts in key Standard-setting Bodies (SSBs). Between 2011 and 2018, China's share of International Standards Organization (ISO) Technical Committee/Subcommittee and Working Group secretariats, respectively, almost doubled and more than tripled.[29] Chinese representatives for the first time in 2020 took on a greater number of new ISO technical

17   Council of the European Union, "EU priorities at the United Nations during the 76th United Nations General Assembly, September 2021 - September 2022 – Council conclusions (12 July 2021)," (July 2021): https://www.consilium.europa.eu/media/51240/st10393-en21.pdf (accessed June 22, 2022).

18   BRICS, "XIV BRICS Summit Beijing Declaration," (June 23, 2022): http://www.brics.utoronto.ca/docs/220623-declaration.html (accessed August 15, 2022).

19   G7 Germany, "2022 Resilient Democracies Statement," (June 27, 2022): https://www.g7germany.de/resource/blob/974430/2057608/61edf 594f5ca30fb7b2ae4b79d16f1e6/2022-06-27-g7-resilient-democracies-statement-data.pdf?download=1 (accessed September 15, 2022).

20   "A Declaration for the Future of the Internet," (April 22, 2022): https://www.whitehouse.gov/wp-content/uploads/2022/04/Declaration-for-the-Future-for-the-Internet_Launch-Event-Signing-Version_FINAL.pdf (accessed September 15, 2022).

21   In fact, the DFI was unable to attract the Global South's systemically important democratic technology powers, which include India, South Africa, Brazil, Indonesia, Malaysia, and Mexico.

22   Tyson Barker, "Withstanding the Storm: The Digital Silk Road, Covid-19 and Europe's Options", in Alessia Amighini (ed.), "China After COVID-19. Economic Revival and Challenges to the World", June 2021, pp. 108-138: https://dgap.org/sites/default/files/article_pdfs/ispi-report-2021-china-after-covid.pdf (accessed June 22, 2022).

23   Stefan Vladisavljev, "Surveying China's Digital Silk Road in the Western Balkans," War on the Rocks, August 3, 2021: https://warontherocks.com/2021/08/surveying-chinas-digital-silk-road-in-the-western-balkans (accessed June 22, 2022).

24   Tin Hinane El Kadi, "The Promise and Peril of the Digital Silk Road," Chatham House, June 6, 2019: https://www.chathamhouse.org/2019/06/promise-and-peril-digital-silk-road (accessed June 22, 2022).

25   Philipp Oltermann, "Germany's 'China City': how Duisburg became Xi Jinping's gateway to Europe," The Guardian, August 1, 2018: https://www.theguardian.com/cities/2018/aug/01/germanys-china-city-duisburg-became-xi-jinping-gateway-europe (accessed September 15, 2022).

26   G7 Germany, "G7 Leaders' Communiqué," June 28, 2022, pp. 15-16: https://www.g7germany.de/resource/blob/974430/2057914/09bf78deb629910d b2c445a1e7595f0b/2022-06-28-leaders-communique-data.pdf?download=1 (accessed June 28, 2022).

27   Sheridan Prasso, "China's Digital Silk Road Is Looking More Like an Iron Curtain," Bloomberg, January 10, 2019: https://www.bloomberg.com/news/features/2019-01-10/china-s-digital-silk-road-is-looking-more-like-an-iron-curtain (accessed September 15, 2022).

28   European Commission, "Global Gateway," (December, 2021): https://ec.europa.eu/info/strategy/priorities-2019-2024/stronger-europe-world/global-gateway_de (accessed June 22, 2022).

29   Tim Rühlig, "The Shape of Things to Come. The Race to Control the Technical Standardisation", December 2021, p. 24: https://www.europeanchamber.com.cn/en/publications-archive/966/The_Shape_of_Things_to_Come_The_Race_to_Control_Technical_ Standardisation (accessed June 22, 2022).

1 – COUNTRY REPRESENTATION IN ICT STANDARD-SETTING WITHIN THE ISO/IEC FRAMEWORK

Participation in ISO/IEC
JTC 1 Subcommittes   ● 2017   ● 2022

Source: Authors' illustration based on data compiled from the official ISO and IEC websites

leadership positions than Germany.[30] Notably, China is the only country that participates in every subcommittee of the Joint Technical Committee (JTC 1), which is central to the development of ICT standards within the ISO/International Electrotechnical Commission (IEC) framework, including for cloud computing, the Internet of Things, and AI.[31] Chinese nationals have also recently held, or are holding, the top leadership position at the ISO,[32] the ITU,[33] and the IEC.[34]

For Germany and Europe, the creeping shift from standard-setter to standard-adopter risks inflicting substantial adjustment costs on industry.[35] Germany still accounts for more secretariats than the United States, China, and other major countries in the ISO and IEC.[36] But China's state-centric standardization system has allowed Beijing to expand influence strategically in domains such as AI and 5G networking.[37] This is also a political concern. Standards can enshrine values, such

30   Ibid., p. 25.

31   Data compiled from ISO and IEC websites.

32   Xinhua, "ISO elects first Chinese president," Xinhua, September 21, 2013:
      http://www.china.org.cn/world/2013-09/21/content_30091790.htm (accessed June 22, 2022).

33   International Telecommunication Union (ITU), "Office of the Secretary-General," 2022:
      https://www.itu.int/en/osg/Pages/default.asp (accessed September 3, 2022).

34   International Electronical Commission (IEC), "IEC Leadership," 2022: https://www.iec.ch/leadership (accessed June 22, 2022).

35   On adjustment costs and the power politics of international standard-setting, see Walter Mattli and Tim Büthe,
      "Setting International Standards: Technological Rationality or Primacy of Power?," World Politics, 56(1) (2011), pp. 1-42:
      https://www.cambridge.org/core/journals/world-politics/article/setting-international-standards-technological-
      rationality-or-primacy-of-power/950CCFEEFE34691BF6E2584141B0023A (accessed June 22, 2022).

36   Tim Rühlig, "The Shape of Things to Come. The Race to Control the Technical Standardisation", December 2021, p. 24:
      https://www.europeanchamber.com.cn/en/publications-archive/966/The_Shape_of_Things_to_Come_The_Race_to_Control_Technical_
      Standardisation (accessed June 22, 2022).

37   Valentina Pop et al., "From Lightbulbs to 5G, China Battles West for Control of Vital Technology Standards," The Wall Street Journal, February 8, 2021:
      https://www.wsj.com/articles/from-lightbulbs-to-5g-china-battles-west-for-control-of-vital-technology-standards-11612722698
      (accessed June 22, 2022).

as privacy protection (or the lack thereof), and may turn into national security threats when they (deliberately) include cyber vulnerabilities that become unknowingly adopted around the world.[38]

Yet, amid this fragmentation, a new institutional architecture for the governance of emerging technologies is starting to develop. AI is a key example of this, given the G7-initiated Global Partnership on AI (GPAI), the Organisation for Economic Co-operation and Development's Council on AI, the Council of Europe's Ad Hoc Committee on AI (CAHAI), and major technology companies' AI principles. Similar governance ecosystems are expected to develop and create norms and standards for quantum technologies, the use of cryptocurrencies, a distributed ledger-based internet (Web3), and smart and green technologies. This will open a critical diplomatic playing field for Germany, the EU, and their partners.

The Current Policy Approach

Germany's commitment to multilateralism and a rules-based order strongly shapes its approach to international technology policy. The *Ampel* government has made strengthened multilateralism and support for global, open, and secure digital connectivity a centerpiece of its foreign policy.[39]

Consistent with this outlook, Germany is a key player in the construction of a multilateral architecture for technology cooperation. Following the UN High-Level Panel on Digital Cooperation, Germany, with the United Arab Emirates, championed proposals for a framework for global digital cooperation that include a reformed Internet Governance Forum (IGF).[40] Germany convened the IGF in 2019 and is considering hosting the 2025 gathering. Germany is also advancing the establishment of a normative order in cyberspace. It is a supporter of the Paris Call for Trust and Security in Cyberspace[41] and is engaged in the Organization for Security and Co-operation in Europe, the Council of Europe's work on artificial intelligence (CAHAI) and data protection (Convention 108+), and the UN OEWG on ICT in the context of international security.

At the same time, Germany is struggling to leverage its participation in smaller and more informal groups to develop a forward-looking technology agenda with like-minded states. Germany's 2017 G20 presidency demonstrated the country's ability to anchor technology as a core issue, including by hosting the G20's first-ever digital ministers' meeting.[42] However, the government's prism on digital issues remains primarily commercial. During its current G7 presidency, Berlin boosted its rhetoric on challenges such as internet fragmentation and digital authoritarianism.[43] In substance, however, Germany chose not to make digital issues a strategic policy priority.[44]

Germany is, however, actively drawing on its extensive diplomatic network and development apparatus to engage with the Global South on digital issues. It has recently revived regular digital dialogue with key countries, such as Brazil, Japan, and India, to prepare joint research and development projects, discuss cyber issues, and coordinate work in multilateral settings.[45] The bilateral format has proven useful, and

38   Tim Rühlig, "The Rise of Tech Standards Foreign Policy," DGAP Online Commentary, German Council on Foreign Relations (February 2022): https://dgap.org/en/research/publications/rise-tech-standards-foreign-policy (accessed June 22, 2022).

39   Sozialdemokratische Partei Deutschlands (SPD), BÜNDNIS 90/DIE GRÜNEN and Freie Demokratische Partei (FDP), "Mehr Fortschritt wagen. Bündnis für Freiheit, Gerechtigkeit und Nachhaltigkeit" [Risking more progress. Alliance for freedom, justice and sustainability], (December 2021), pp. 114-115: https://www.spd.de/fileadmin/Dokumente/Koalitionsvertrag/Koalitionsvertrag_2021-2025.pdf (accessed June 22, 2022).

40   The Federal Government of the Federal Republic of Germany and the Government of the United Arab Emirates, "Recommendation 5A/B. Options for the future of Global Digital Cooperation," (September 2020): https://www.global-cooperation.digital/GCD/Redaktion/EN/Downloads/options-for-the-future-of-global-digital-cooperation.pdf?__blob=publicationFile&v=2 (accessed June 22, 2022).

41   The Paris Call for Trust and Security in Cyberspace, "Home," (2021): https://pariscall.international/en (accessed June 22, 2022).
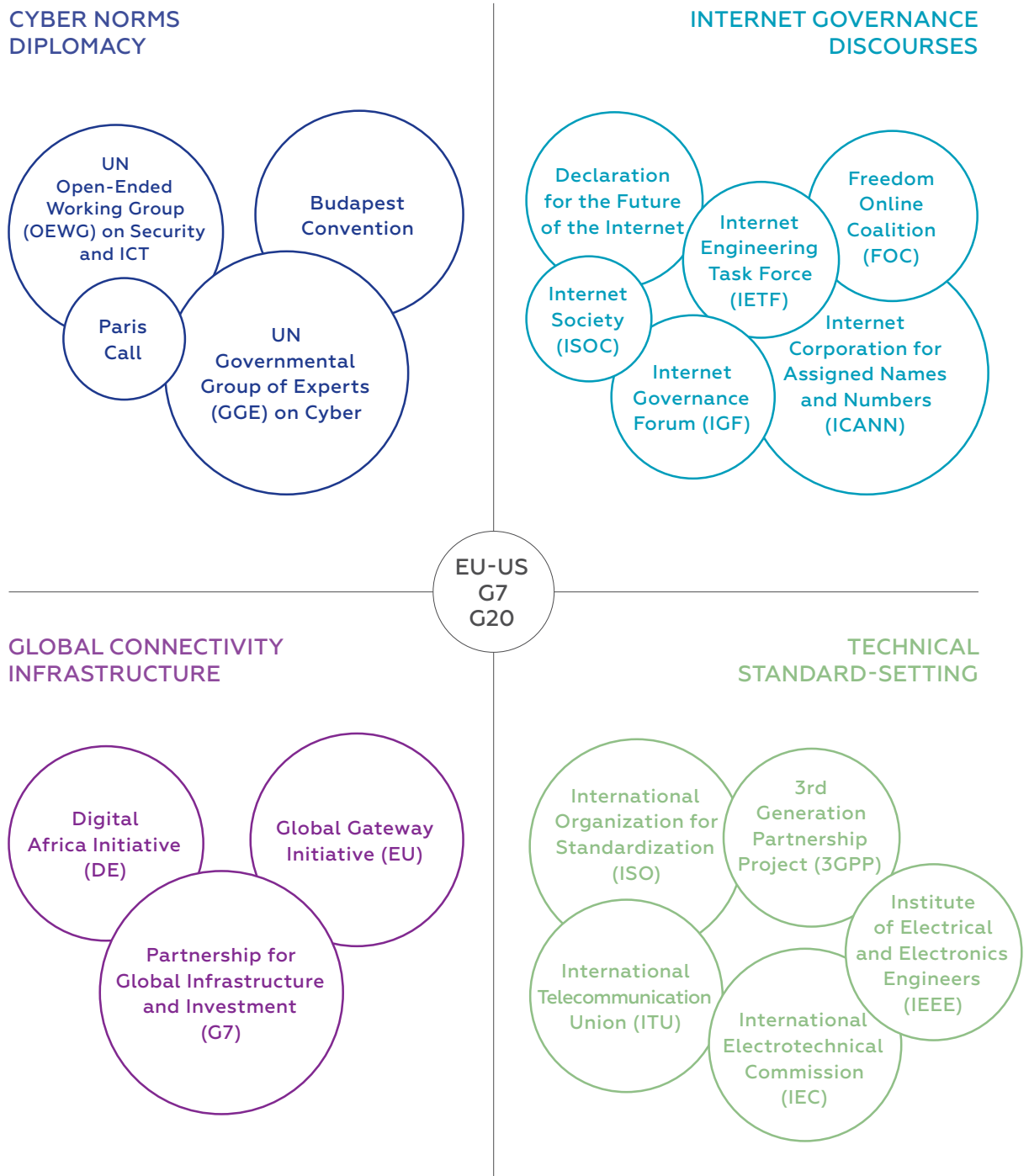
42   Federal Ministry for Economic Affairs and Climate Action (BMWK), "G20 – Shaping digitalization at global level," (2022): https://www.bmwi.de/Redaktion/EN/Artikel/Digital-World/g20-shaping-digitalisation-at-global-level.html (accessed June 22, 2022).

43   G7 Digital Ministers' meeting, "Ministerial Declaration," (May, 2022): https://www.bundesregierung.de/resource/blob/998440/2038510/e8ce1d2f3b08477eeb2933bf2f14424a/2022-05-11-g7-ministerial-declaration-digital-ministers-meeting-en-data.pdf?download=1 (accessed June 22, 2022).

44   In fact, the digitalization section comes last in the 28-page G7 leaders' summit communiqué. G7 Germany, "G7 Leaders' Communiqué," June 28, 2022: https://www.g7germany.de/resource/blob/974430/2062292/9c213e6b4b36ed1bd687e82480040399/2022-07-14-leaders-communique-data.pdf?download=1 (accessed June 28, 2022)

45   E.g., Auswärtiges Amt, "Deutsch-indische Cyberkonsultationen" [German-Indian Cyber Consultations], December 14, 2017: https://www.auswaertiges-amt.de/de/aussenpolitik/themen/cyber-aussenpolitik/indien-cyberkonsultationen/1890390 (accessed June 28, 2022).

2 – KEY INSTITUTIONS AND INTIATIVES FOR GERMAN INTERNATIONAL TECHNOLOGY POLICY

CYBER NORMS DIPLOMACY

UN Open-Ended Working Group (OEWG) on Security and ICT

Budapest Convention

Paris Call

UN Governmental Group of Experts (GGE) on Cyber

INTERNET GOVERNANCE DISCOURSES

Declaration for the Future of the Internet

Internet Engineering Task Force (IETF)

Freedom Online Coalition (FOC)

Internet Society (ISOC)

Internet Governance Forum (IGF)

Internet Corporation for Assigned Names and Numbers (ICANN)

EU-US
G7
G20

GLOBAL CONNECTIVITY INFRASTRUCTURE

Digital Africa Initiative (DE)

Global Gateway Initiative (EU)

Partnership for Global Infrastructure and Investment (G7)

TECHNICAL STANDARD-SETTING

International Organization for Standardization (ISO)

3rd Generation Partnership Project (3GPP)

Institute of Electrical and Electronics Engineers (IEEE)

International Telecommunication Union (ITU)

International Electrotechnical Commission (IEC)

Source: Authors' illustration

Berlin is negotiating similar digital dialogues with South Korea, Indonesia, and Argentina. Germany has also recognized Africa's strategic importance in the digital sphere. Since 2015, it has channeled €164 million into digital projects through its "Digital Africa" initiative[46] and initiated more than 200 public-private partnerships in the African technology sector.[47] The digital and foreign ministries are scoping institutionalized digital dialogue with multistakeholder participation from the private sector, civil society, and subnational governments in the African Union, Kenya, South Africa, and Ghana. Intensified digital cooperation with Egypt is under consideration.

But as the strategic stakes rise, Germany's leverage to shape global digital governance increasingly depends on realizing synergies with EU efforts. Germany's technology diplomacy is, in fact, embedded in a larger turn toward a distinctly (geo-)strategic outlook on technology policy at the EU level. The bloc's Digital Compass for 2030 affirms that technology is a factor in "global influence,"[48] and Brussels emphasizes, more than the German policy discourse does, the link between digital sovereignty and European values.[49]

The EU has begun to translate this link into actionable foreign policy. This includes formats such as the EU-US Trade and Technology Council (TTC) (whose Paris meeting, for instance, launched new ICT security guidelines for trustworthy vendors in development initiatives, expanding the EU's 5G cybersecurity toolbox), the new TTC with India,[50] and the Global Gateway initiative.[51] Against the backdrop of Russia's aggression against Ukraine, the EU-US TTC, in particular, is developing into a vehicle for democratic coordination on issues ranging from investment screening and export controls to resilient semiconductor supply chains.[52] The EU is also opening an office in Silicon Valley to strengthen transatlantic engagement on digital agendas.[53]

Recommendations

Germany's success as a shaper of a global technology order that enables it as a leading high-tech industrial economy and bends towards democracy will depend on how successfully it nests its values and interests in a set of alliances, partnerships, and norms. To that end, German should:

Advance the notion of a democratic technology trust zone. This trust zone would regulate flows of skills, capital, and data to boost competitiveness and trustworthiness for strategically important ICT infrastructure such as network equipment, cloud/edge service providers, and smart city technology. It should be built on regulatory best practices and a strategic approach to technology-industrial policy that leverages mutual dependencies to lock in cooperation and safeguard access to critical technologies and materials. To that effect, the government should support a strong institutional nucleus in the form of an ambitious G7 digital ministerial meeting, an expanded OECD digital agenda, and intensified EU-US TTC meetings.

Establish a global connectivity doctrine with open internet access as a fundamental right. Germany should work with EU members and other like-minded democracies to devise jointly financed "connectivity packages" that bundle digital infrastructure assistance with cyber capacity-building and long-term support for local digital rights NGOs. But cooperation must extend beyond national governments. Germany should prod the EU and NATO, in addition to like-minded countries, to provide capabilities

46   Kooperation International, "Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung: Start der digitalen Lernplattform "Africa Cloud" angekündigt" [Federal Ministry for Economic Cooperation and Development: Launch of digital learning platform "Africa Cloud" announced], (November 2019): https://www.kooperation-international.de/aktuelles/nachrichten/detail/info/bundesministerium-fuer-wirtschaftliche-zusammenarbeit-und-entwicklung-start-der-digitalen-lernplattf (accessed June 22, 2022).

47   Federal Ministry for Economic Cooperation and Development, "Strategische Partnerschaft Technologie in Afrika" [Strategic Partnership Technology in Africa] (2022): https://www.bmz.de/de/mitmachen/wirtschaft/digitales-afrika-13718 (accessed June 22, 2022).

48   European Commission, "2030 Digital Compass: the European way for the Digital Decade," March 9, 2021, p. 18: https://ec.europa.eu/info/sites/default/files/communication-digital-compass-2030_en.pdf (accessed June 28, 2022).

49   Notably, European Commission President Ursula von der Leyen defined "tech sovereignty" as "the capability that Europe must have to make its own choices, based on its own values, respecting its own rules." European Commission, "Shaping Europe's digital future: op-ed by Ursula von der Leyen, President of the European Commission," February 19, 2020: https://ec.europa.eu/commission/presscorner/detail/en/AC_20_260 (accessed June 22, 2022).

50   European Commission, "EU-India: Joint press release on launching the Trade and Technology Council," April 25, 2022: https://ec.europa.eu/commission/presscorner/detail/en/IP_22_2643 (accessed June 22, 2022).

51   European Commission, "Global Gateway," December 2021: https://ec.europa.eu/info/strategy/priorities-2019-2024/stronger-europe-world/global-gateway_de (accessed June 22, 2022).

52   European Commission, "EU-US Trade and Technology Council Inaugural Joint Statement," September 29, 2021: https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_21_4951 (accessed June 22, 2022).

53   Euractiv, "Neues EU-Büro im Silicon Valley für Big-Tech-Diplomatie" [New EU office in Silicon Valley for Big Tech diplomacy], (July 28, 2022): https://www.euractiv.de/section/innovation/news/neues-eu-buero-im-silicon-valley-fuer-big-tech-diplomatie (accessed August 15, 2022).

(e.g., satellites) that expand connectivity, narrow the global digital divide and serve UN Sustainable Development Goals on connectivity (9c) as well as maintain open information flows during authoritarian-driven Internet shutdowns and in conflict zones.

Create a German Open Tech Foundation. The *Ampel* coalition specifically refers to digital sovereignty in the Global South as a priority for ensuring freedom to choose vendors, platforms, and ICT infrastructure; avoiding lock-in effects; and guaranteeing an individual, not state-centric, notion of digital self-determination. The newly established Sovereign Tech Fund provides a means of financially supporting open source and open technology, principally in Germany. It should be complemented with a German Open Tech Foundation to provide international funding, particularly among communities in the Global South, for development of democracy-affirming and privacy-enhancing technologies in line with the coalition's global understanding of digital sovereignty.

Counter politicization of critical and emerging technologies standard-setting. As the weight of non-market economies in SSBs grows, Germany should initiate an international study group that identifies whether and what political instruments may be used to capture standard-setting for critical and emerging technologies. This should form the basis for coordinated engagement with SSBs on ensuring the primacy of technical criteria and preserving SSBs' reputation for impartiality. The German government should also encourage high-quality draft introductions, for example by allowing the participation of the academic and small- and medium-sized enterprise (SME) sectors in emerging technology standards work to be considered funding-eligible R&D.

Work to avoid the emergence of a digital "Non-Aligned Movement". A democratic technology order must reach beyond the transatlantic community. Worryingly, as technology becomes increasingly geopolitical, G77+ states are avoiding a clear affirmation of a common democratic technology agenda. India is a pivotal but complex partner in this regard. Germany already revived in 2022 its digital dialogue with India and included the country in this year's G7 guest list. Given India's 2023 G20 presidency, Germany should now build on this to emphasize India's democratic responsibility to champion an inclusive digital agenda centered on climate-friendly technology as well as open and free connectivity.[54]

Engage collaboratively in EU-US technology dialogue, especially in the TTC. Germany should create a bilateral digital dialogue with the United States that can align and amplify policy deliverables from the TTC.[55] But Germany should also increase its engagement elsewhere, particularly in a constructive conclusion to and implementation of the post-Privacy Shield Transatlantic Data Privacy Framework. The German-American Futures Forum, which was conceived as part of the July 2021 Washington Declaration[56] and whose initial meeting will occur in November 2022, could be another vehicle for deeper engagement, specifically on democracy-enabling technologies and norms.

Create asymmetric technology alliances with subnational governments. Cities and states are increasingly assuming digital governance responsibilities that national governments are unwilling or unable to undertake. In the United States, cities and states have led in data protection, in part by placing guardrails around AI-powered facial recognition technology and algorithmic bias in sensitive areas such as hiring. In China, Brazil, and India, subnational governments are driving technology-industrial and regulatory policy. Germany, in line with the European Council's new digital diplomacy conclusions, should work with subnational governments to build technology alliances that reflect German and EU regulatory values and support subnational adoption of cyber and internet governance norms.

54 David Hagebölling, Valentin Weber, Christoph Meinel and Tyson Barker, "Governing the internet for the global common good", Global Solutions Journal, 8 (2022), pp. 124-133: https://www.global-solutions-initiative.org/wp-content/uploads/2022/03/Global-Solutions-Journal-Issue-8.pdf (accessed, June 29, 2022).

55 Tyson Barker, "The Hidden G2 for Democratic Tech Governance is the EU-US Relationship," (June 2022): https://dgap.org/sites/default/files/article_pdfs/dgap_analysis_no._2_june_10_2021_18_pp_0.pdf (accessed August 15, 2022).

56 The Federal Government, "A German-American partnership for the future," (July 16, 2021): https://www.bundesregierung.de/breg-en/news/federal-chancellor-usa-trip-1942938 (accessed August 15, 2022).

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