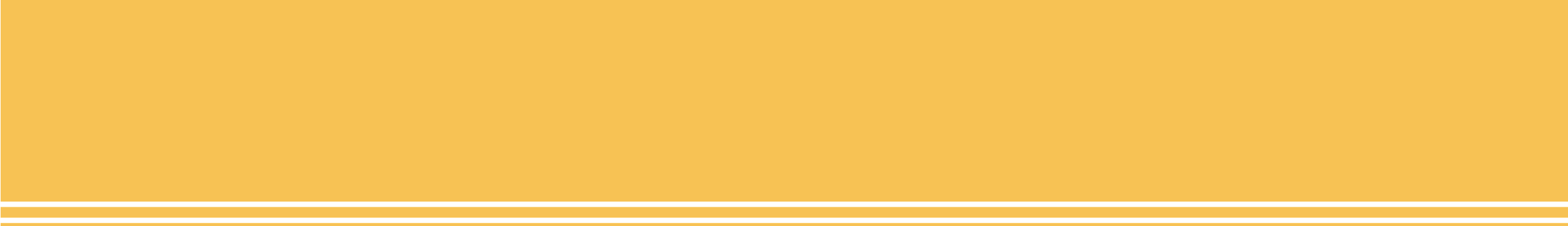
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**Aceso Global**

1616 P Street NW, Suite 103

Washington DC, USA 20036

www.acesoglobal.org

swells@acesoglobal.org

**Policy Brief:**

**Regional Public Health Institutions**

May 2023

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1. Introduction

This paper addresses the role of regional and sub-regional institutions in preventing, preparing for, and responding (PPR) effectively to health threats that do not respect physical borders and can have devastating effects on populations and economies.

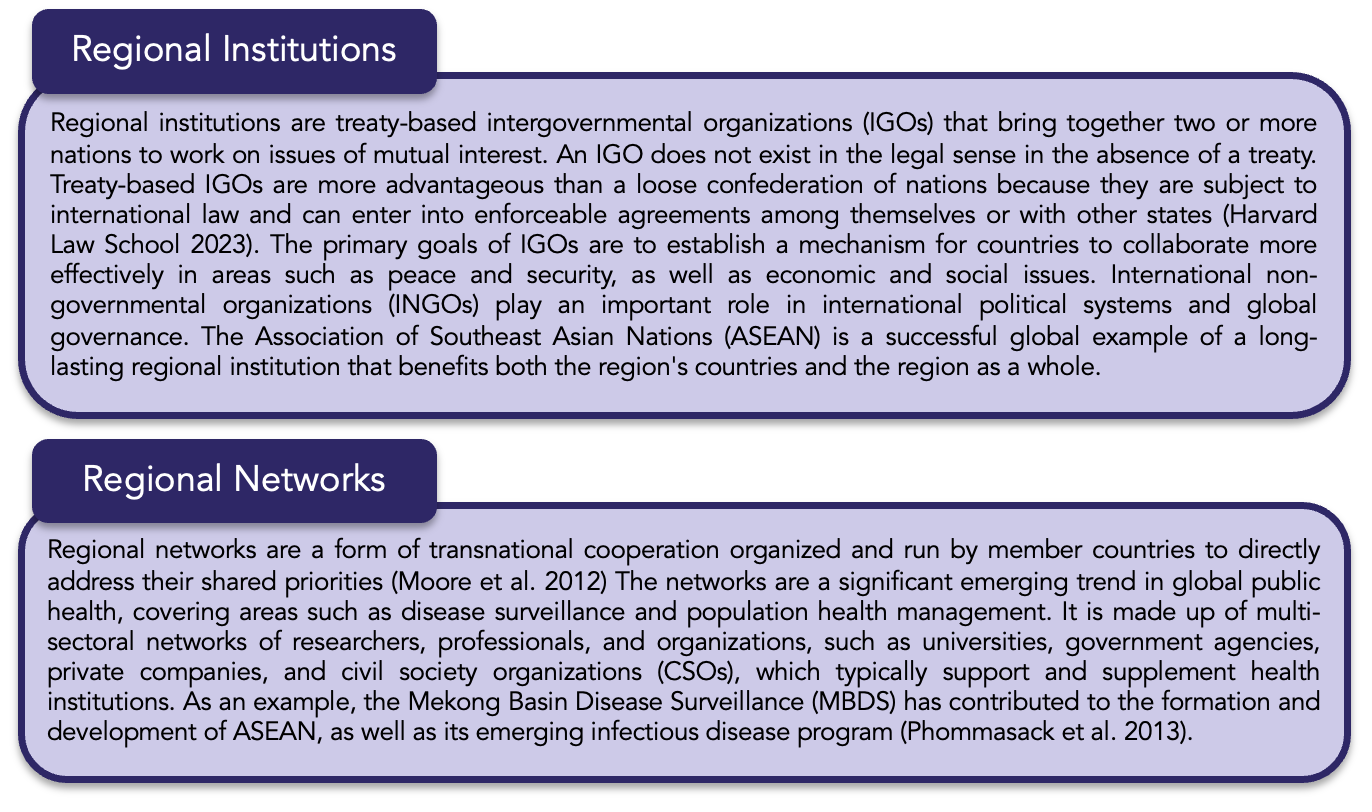
The COVID-19 pandemic had a profound impact on the world, affecting both the global economy and public health. The surge in hospitalizations and excess deaths brought home the human cost of pandemics, and combined with declines in GDP, confronted policymakers with a multitude of challenges in political and economic priorities. The link between the health of the economy and the health of the population became clear, and the global agenda for the immediate short term is addressing ways to prevent, prepare, and respond to pandemics. In Asia and the Pacific, this agenda has raised discussions about the need for new forms of regional collaboration on PPR and the potential for a new regional institution to lead this work.

The challenge of retaining sovereignty and yet allowing an independent regional institution representing public health priorities within a defined cross-national area requires a careful balancing act. It is one that the world did not achieve during the last pandemic. Regional bodies of World Health Organization (WHO), regional development banks like the Asian Development Bank (ADB), and regional public health bodies, such as the European Centre for Disease Control and Prevention (ECDC) played important roles over the course of the pandemic in supporting member countries in collaboration. However, the overarching lesson from the pandemic is the crucial role of prevention, preparedness, and response (PPR) to pandemics, as these were uneven in virtually all regional institutions.

The lessons from the COVID-19 pandemic are being addressed at multiple fora, and the Indonesian G20 Presidency established a Pandemic Fund to foster national and regional PPR to health threats. All agree that changes are needed, but the question is how to successfully structure agreements that meet the full range of political and economic concerns that underpin regional coordination, and design regional institutions that have the authority to act in the collective interests of the member countries and their populations before and during a health crisis. This paper attempts to outline these issues as they apply to the Asia region.

1. Typology of Regional Organizations

Regional institutions provide the structure for convening member countries to focus on an agreed set of regional priorities that form the basis for decisions and actions. Figure 1 defines regional institutions. The definition provides the context for public health institutions as well. In reviewing regional organizations, it is clear that major projects and networks complement the work and directions set by regional institutions, and in some cases feed into the regional agenda or complement formal regional initiatives. Figure 1 also defines Regional Networks, which in Asia encompasses a multitude of voluntary organizations with variable country participation. As a region, Asian countries are engaged in public health networks addressing many priorities.

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**Figure 1: Defining Regional Institutions and Regional Networks**

Source: Aceso Global 2023; Harvard Law School 2023; Moore et al. 2012; Phommasack et al. 2013.

The major difference between regional institutions and regional networks is the fact that regional institutions are treaty-based intergovernmental organizations that require yielding some sovereignty for the collective benefit. Acting collectively means that the regional priorities drive decisions. And these represent decisions that benefit both the country and the region. How much authority a regional institution has is a decision of the member countries and varies widely.

In regional networks, participation, contributions, and active engagement are all optional and have limited impact on the networks themselves, though critical mass is needed if a network is

to represent a (sub)region. The value of such networks is that they bolster regional activity and achievements, for example, in collectively addressing malaria or agreeing to coordinate surveillance. Networks also can build up to becoming a regional institution as occurred in the Americas with the Pan American Sanitary Bureau (PASB), as discussed below.

In the realm of public health, regional institutions can either be dedicated to public health, such as the Association of Southeast Asian Nations (ASEAN)’s Centre for Public Health Emergencies and Emerging Diseases (ACPHEED), or have a public sector arm, like ASEAN, that has a Health Cluster focused on public health across the member countries. Both types of arrangements are relevant institutions for PPR.

Figure 2 provides a typology of: (1) regional institutions in Asia, (2) prominent regional public health institutions both in Asia and outside of Asia; and (3) major regional networks across Asia. Each of the regional institutions not dedicated to public health have the health activities added to clarify the name and existence of a public health component in each regional institution’s agenda. Non-Asian public health institutions are included to provide some context and lessons from elsewhere that can inform decision making and provide ideas for further regional collaboration.

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**Figure 2: Typology of Regional Institutions in Asia and Outside Asia, and Asian Networks**

Source: Aceso Global 2023

1. Characteristics and Functions of Regional Public Health Institutions

The importance of building institutions to collectively prevent, prepare, and respond to health threats was highlighted during the Indonesian presidency of the G20, as noted above. The meeting spearheaded the establishment of a Financial Intermediary Fund for Pandemic Prevention, Preparedness, and Response (known as the Pandemic Fund) that will be hosted at the World Bank and provide financing for both country and regional initiatives for PPR (Wiradji 2022). The establishment of the Pandemic Fund marks an important step, albeit a single, if delayed, step, in the global community’s coming together to better address future threats, and it uniquely targets regional health institutions.

The US Centers for Disease Control and Prevention (CDC) has provided a blueprint for multiple regional organizations, including the People’s Republic of China CDC and Republic of Korea CDC, among others in Asia. The US CDC effectively coordinates PPR across 50 largely independent states, which vary in public health policy, it provides a successful model for regional networks in structure and operations. The US CDC exemplifies how to define regional public health institutions within the context of sovereign members who have both domestic and regional responsibilities.

Key Regional Health Institutions in Asia and Beyond

Important regional public health institutions and regional institutions with health components from the Asia region are shown in Table 1 along with the memberships of each, their health objectives, and functions. In addition, it includes a select group of regional institutions that have direct responsibility for PPR, and whose experiences offer insights to Asian institutions that are evolving or expanding to effectively address PPR in a collective manner. Note the other international financial institutions, donors, and United Nations (UN) agencies are excluded, although the Pan American Health Organization (PAHO), the regional office of WHO, is included because it is an example of a successful network becoming part of a mainstream UN organization (see Box 2).

|  |  |  |  |
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| **Table 1: Characteristics of Active Asian and Non-Asian Regional Institutions** | | | |
| **Institutions**  **(Founding date)** | **Members** | **Health Objectives** | **Functions** |
| **Asia** | | | |
| Association of Southeast Asian Nations (ASEAN)  (1967) | ASEAN Member States | * Economic Growth * Social and Cultural Progress | * Policy development * Research and Monitoring * Initiative implementation |
| ASEAN Centre for Public Health Emergencies and Emerging Diseases (ACPHEED) (2022) | ASEAN Member States | * PPR * Surveillance and Risk Assessment * Risk Communications * Capacity Building | * Information sharing and analytics * Technical Training * Coordination and Network Development |
| Central Asia Regional Economic Cooperation (CAREC) (2001) | Afghanistan, Azerbaijan, PRC, Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, Uzbekistan | * Disease Surveillance * Health governance * Promote regional collaboration * PPR | * Facilitate access to supplies * Technical training * Information sharing and analytics |
| Greater Mekong Subregion (GMS) (1992) | Cambodia, PRC,  Lao PDR, Myanmar, Thailand, Viet Nam | * Disease Surveillance * Strengthen National Health Systems | * Policy development * R&D * Technical training * Information Sharing * Health Impact Assessments |
| The Pacific Community’s Public Health Division (PC-PHD) (1947) | Australia and Pacific Islands | * Health Governance * Economic Recovery * Hosts Pacific Public Health Surveillance Network (PPHSN) | * Technical training * Financial support for essential services * Information sharing |
| **Outside Asia** | | | |
| Africa Centres for Disease Control and Prevention  (2017) | Africa Union Countries | * Strengthen Public Health Institutions * PPR * Disease Surveillance | * Analytics * Technical training * Coordinate National Public Health Institutes * Information sharing |
| European Centre for Disease Prevention and Control (ECDC) (2004) | EU Countries | * Infectious Diseases Surveillance * Health System Strengthening | * Methods & Standards * Disease Programs * Data analytics * Technical training * Information sharing |
| Pan American Health Organization (PAHO)/WHO  (1960)  PASB (1902) | Countries of the Americas, Puerto Rico, France, Netherlands, United Kingdom, Portugal, Spain | * Disease Surveillance * Strengthen Public Health Institutions * Promote Regional Collaboration | * Policy development assistance * Technical training * Information sharing |

EU = European Union, Lao PDR = Lao People’s Democratic Republic, PASB = Pan American Sanitary Bureau, PRC = People’s Republic of China, PPR = prevention, preparedness, and response, R&D = research and development, WHO = World Health Organization.

Source: ADB 2019; ADB 2023; Africa CDC 2023; ASEAN 2020; ASEAN 2021; CAREC 2022; ECDC 2023; GMSECP 2021; PAHO 2011; PAHO 2023; PHD 2023.

Key Asian Regional Health Networks

Asia has a broad range of initiatives and networks that address PPR. The major networks in Asia focused on PPR are provided in Table 2. These civil society bodies play an outsized role in informing governments and the private sector regarding many aspects of health and public health, and by extension are a valuable source of data, information, and evidence for regional institutions. Many have received significant support from the ADB, in particular the Asian eHealth Information Network (AeHIN) and Mekong Basin Disease Surveillance (MBDS). Some, like Central Asia Regional Economic Cooperation (CAREC) and Greater Mekong Subregion (GMS) have (had) their Secretariats housed with the ADB.

AUS = Australia, EU = European Union, HFG = USAID’S Health Finance and Governance Project, IDRC = International Development Research Centre, Norad = Norwegian Agency for Development Cooperation, P4H = Providing for Health, PPR = prevention, preparedness, and response, R&D = research and development, USAID = United States Agency for International Development, WB = World Bank, WHO = World Health Organization, WBI = World Bank Institute, WRO = World Research Organization.

Sources: AeHIN 2023; ANHSS 2023; ASEAN 2020; Equitap 2023; MBDS 2023; Patrick J. McGovern Foundation 2021; SEALAB 2023; SEAOHUN 2023.

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| --- | --- | --- | --- |
| **Table 2: Asia and Pacific Regional Health Networks: Objectives, Funding, and Activities** | | | |
| **Networks**  **(Launch date)** | **Current Funding Sources** | **Health Objectives** | **Activities** |
| ASEAN Plus Three Emerging Infectious Disease (EID) Programme (2006) | * ASEAN Plus Three and Australia | * PPR | * Research * Technical training |
| Asian eHealth information network (AeHIN) (2011) | * Patrick J. McGovern Foundation, WHO, WRO, Norad | * Disease Surveillance | * R&D * Technical training * Workshops |
| Asia Pacific Network for Health Systems Strengthening (ANHSS) (2009) | * USAID, WB, HFG, P4H, Equitap, AUS | * Health Policy Design and Implementation | * Research * Technical training * Information sharing |
| Equity in Asia-Pacific Health Systems (Equitap) (2000) | * 2001-2006: EU, Ford Foundation, Rockefeller Foundation * 2007-present: IDRC, AusAID * WHO, ADB, WB, WBI, Governments | * Health Equity * Financial, Utilization, Risk | * Research |
| Mekong Basin Disease Surveillance (MBDS) (2001) | * Rockefeller Foundation * Others: AusAID, WHO, ASEAN | * Disease Surveillance * Health/Social Policy * Promote Regional Collaboration | * Technical training * Information sharing * Workshops |
| South-East Asia Lab Network (SEALAB) (2018) | * AUS and Indo-pacific Centre for Health Security | * Health System Strengthening * PPR | * Quality assessment * Technical training |
| Southeast Asia One Health University Network (SEAOHUN) (2011) | * USAID | * PPR | * Research * Technical training |

What are Some Lessons from Regional Institutions Outside of Asia?

While three regional public health organizations are listed in Figure 2 above, two are particularly relevant to the Asia region, the European Union (EU) and its European Centre for Disease Control (ECDC) that launched in 2004, and the regional arm of WHO in the Americas, the Pan American Health Organization that evolved from the Pan American Sanitary Bureau (PASB). The Africa Centres for Disease Control and Prevention, or Africa CDC, was only very recently established and has few lessons for the Asia region at this time.

The ECDC demonstrates how regional institutions can evolve in response to changing needs of member states (see Box 1).

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| --- |
| **Box 1: Evolution of European Union Health Policy and the**  **European Center for Disease Prevention and Control (ECDC)**  The European Union (EU) historically focused primarily on the political and economic integration of Europe as well as the expansion of the European block.  The EU added health to the agenda as early as the 1980s due to the rising policy importance of healthcare across member countries. However, with the onset of infectious disease, including "mad cow" disease and severe acute respiratory syndrome (SARS), the institution realized the necessity of acting collectively in the interests of public health. This resulted in a series of actions, including the establishment of health agencies, regulatory mandates, and collective action, which remain in effect today.  Established in 2005, the European Centre for Disease Prevention and Control (ECDC), based in Stockholm, Sweden, was tasked with strengthening the EU's ability to prepare for and respond to potential health threats across its 30 member countries. The ECDC collects, analyzes, and disseminates data on diseases and topics like COVID-19, influenza, antimicrobial resistance, and vaccinations. It also offers risk assessments and PPR guidance for public health threats throughout Europe.  The EU became more active in health in the establishment of the European Medicines Agency (EMA) in 1995, and the implementation of joint procurement mechanisms. The EMA serves as the EU's regulatory organization responsible for aligning standards for medicinal goods, such as vaccines and medicines, prior to and after licensing. They also advocate immunization and collaboration between nations in regard to medications, but final procurement and vaccination implementation remain the discretion of each country.  In response to the 2009 H1N1 flu, the EU established a voluntary joint procurement mechanism for vaccines and medical supplies that came into effect in 2013. The mechanism aims to improve purchasing power and ensure equitable access for member states, with botulinum antitoxin being their first successful vaccine purchase in 2016.  ECDC played a key role in coordinating the EU's response during the COVID-19 pandemic, and the EU implemented a number of strategies to increase its pandemic prevention, preparedness, and response (PPR). The ECDC received increased funding and a broadened legal mandate to coordinate the EU's surveillance and response, including improvements in laboratory support and continuous updates to PPR guidelines and vaccines.  The EU provided vaccines and pharmaceutical strategies collectively to ensure stable supplies in the region and used advance purchasing agreements to negotiate contracts with individual vaccine and pharmaceutical manufacturers on behalf of interested Member States. The strategy also helps these industries by establishing a one-stop shop to assist manufacturers with production and supply chain issues. Finally, the EU aided in the integration of the internal market to aid to the supply chain for critical medical equipment and relaxed regulations on state aid to allow for competition and the free flow of medical goods.  **Key Lessons for Asia:**   * Regional public health institutions can evolve as needs emerge, and the role can be strengthened overtime to meet regional priorities as they evolve; * Regulatory and legal flexibility of existing institutions, such as the Association of Southeast Asian Nations (ASEAN), can be harnessed to promote public health collaboration; * Sustained funding and defined legal authority can foster independent action and help to strengthen regional institutions and their health agendas; and * Collective action and collaboration can take various forms, including joint procurement mechanisms, integration of the internal market to enhance the supply chain of health items, foster initiatives that are aligned across borders, and technical support.   Source: ECDC 2023; Greer et al. 2022. |
| The PASB/PAHO offers an example of how a regional project, the Pan American Sanitary Bureau (PASB), provided the foundation for a strong regional public health institution, as it was absorbed into the World Health Organization and provided an established network of countries devoted to public health research and actions. It demonstrates the potential value of regional projects as a way to bring together disparate national priorities and build the infrastructure and inter-country relationships that enhance the viability and vitality of a regional institution (see Box 2). |
| **Box 2: Pan American Sanitary Bureau (PASB):**  **Building a regional institution on the foundation of a regional network**  The Pan American Sanitary Bureau (PASB) was launched in 1902 with the purpose of eliminating maritime quarantines, data collection and utilization on sanitary conditions of seaports and beyond, and control of communicable diseases. The initiative built a network of equals that resulted in strong public health institutions across the Americas that have proven crucial to managing infectious diseases, including polio, yellow fever, Chagas disease, and cholera, among others. It further united the region with an approach of shared responsibilities and multiple funding sources, including own country investments.  In 1958, Pan American Health Organization (PAHO) became the regional arm of the World Health Organization (WHO), but the Pan American Sanitary Bureau (PASB) continued to exist. PASB is currently the acting Secretariat of PAHO. With several research centers established across the Americas, the PASB provides technical and leadership support to Member States as they pursue Health for All. PASB serves as the Regional Office of WHO for the Western Hemisphere and takes on specific health projects in partnership with other organizations in the region.  Following the COVID-19 pandemic, PAHO is leading the way in drafting a new international health agreement to strengthen pandemic prevention, preparedness, and response (PPR) by 2024.  **Key Lessons for Asia:**   * Cooperation among the governments of the region to control infectious diseases facilitates the success of networks; * Streamlining and collaborating on regional responses to health threats is important to controlling the spread of outbreaks; and * Focusing on specific issues (such as data gathering) can be a first step towards a regional network.   Source: Kiernan 2002; Palacios 2020; PAHO 2023. |

1. Functions of Regional Health Institutions and Networks

The functions of the Regional Health Institutions and networks address multiple areas, and they vary across institutions.

Key Functions and Activities of Regional Institutions and Networks

Public health functions such as disease surveillance and control, technical capacity building, knowledge management, joint learning, and research and development (R&D) help build public health systems, human capital, and a sound research ecosystem that can contribute to PPR for future health threats. They offer a basis for effective collective responses. The key functions to achieve effective regional institutions and networks are indicated below.

**Policy and regulation.** These functionsare fundamental to define the scope and controls under which regional entities operate. The manner in which leaders in regional health institutions are chosen provides useful insights for the longevity and strategic direction of member countries, allowing them easier access and influence in their respective national ministries. MBDS employs board members from member governments giving them greater access and influence in their respective national ministries. PAHO and ASEAN secretary-generals have five-year terms, giving them ample time to implement their strategies sustainably. Furthermore, PAHO allows its secretary-general to be re-elected, allowing capable and successful leaders to carry on their vision.

The EU is a prime example of a regional group that has successfully unified health policies in certain areas, such as the regulation of substances of human origin and internal market rules governing pharmaceuticals and health professional qualifications (Greer et al. 2022).

**Disease surveillance**. A major function of regional health organizations, disease surveillance entails an ongoing, systematic collection of disease incidence and prevalence to identify emerging health threats. Virtually all disease-focused institutions entail coordinated surveillance efforts for infectious diseases. MDBS coordinates regional surveillance efforts for malaria, dengue, leptospirosis, HIV/AIDS, and tuberculosis (TB) across its member countries. The Pacific Community conducted disease surveillance for communicable diseases as early as the 1990s, collecting data to share across borders (WHO 2023).

Regional health institutions also contribute to the **analytics** of collected data to effectively plan, implement, and evaluate health programs, as well as information sharing to learn from and improve on best practices within member countries. The ECDC collects and analyzes data to make recommendations, advise practitioners on emerging diseases, assess risks, and offer PPR options. The Pacific Community developed one of the first disease dashboards in 1997 to share data and connect all Pacific health professionals (WHO 2023).

Another critical role of regional health institutions is to mobilize countries for **coordinated** and **collaborative** action against health threats. Although imperfect, PAHO and the EU acted collaboratively and in coordination, particularly during COVID-19, which proved beneficial. PAHO's incident management system was used to coordinate its pandemic response in the Americas, including laboratory response, among other things. In contrast, the EU lagged in its collective procurement expertise to quickly procure COVID-19 vaccines during the pandemic, but mid-way through the pandemic it switched its policies to ensure vaccine access to its member countries, recouping its leadership and coordination role.

Across many regional institutions, the COVID-19 pandemic served to bolster **prevention, preparedness, and response** functions. Similarly, past pandemics have prompted action by regional institutions to better address joint health challenges and prepare for future threats. In the wake of the devastating effects of the 1918 Influenza Pandemic, PAHO established the Pan American Partnership to combat the pandemic through infectious disease surveillance and campaigns, strengthened national legislation, and conducted tropical disease research (Kiernan 2002). The severe acute respiratory syndrome (SARS) and avian flu epidemics in the early 2000s prompted the Asian region to launch ASEAN Plus Three, as an Emerging Infectious Disease Program supported by ASEAN members plus the People’s Republic of China (PRC), Japan, and the Republic of Korea. This Program resulted in the development of laboratory surveillance, information exchange, action plans on infectious diseases and One Health issues, and epidemiological workforce training with the MBDS (Koga 2022).

After the avian flu outbreak in 2006, MBDS brought together multiple ministries with WHO, World Organization for Animal Health (OIE) and United Nations System Influenza Coordination (UNSIC) for simulated exercises of in-country and regional preparedness in response to a pandemic. It focused on surveillance, information sharing and risk communication training to assess their abilities in key areas (Phommasack et al. 2013).

Health institutions also help **build and enhance the health capacity** of member nations. **Technical training** in specialized fields of interest, like information systems in the context of AeHIN, are critical components in building technical and managerial capabilities. South-East Asia Lab Network (SEALAB) bolsters the capabilities of laboratory networks in Cambodia, Myanmar, and Lao People’s Democratic Republic (PDR) through training, workshops, and quality management initiatives. Using prior knowledge of existing and stronger country health systems in the area, GMS is increasing the health workforce capabilities of Cambodia, Lao PDR, and Viet Nam. Regional institutions allow for the ongoing development of technical health capacity, allowing member nations to strengthen their health systems ahead of and in response to pandemic threats.

**Research and development** are of increasing importance to pandemic PPR given the ever-shifting profile of health threats. PAHO established networks of research and development institutions ranging from food and nutrition to vaccines, giving the Americas the coveted ability to develop and manufacture vaccines, which only a few countries can claim. While the EU CDC relies on a network of researchers and institutions to guide their response to health threats and emerging disease issues on the continent, in Asia smaller projects, such as Equitap and Southeast Asia One Health University Network (SEAOHUN), rely on university networks to connect researchers and the latest trends in health policy, financing, and One Health.

The recent COVID-19 pandemic demonstrated that even countries with robust global health security measures, such as fast response and pandemic mitigation, struggled to respond (GHS Index 2019), and those lessons are key to future pandemic prevention and management. Measurement and success indicators have always required **monitoring** of performance and outcomes and serve as an important basis for accountability of stakeholders (Burwell 2020).

Funding of Regional Health Institutions and Networks

The financing of regional institutions is a key element in both the success and survival of regional institutions. ASEAN, for example, has regular member contributions that have been reliable over decades. ASEAN continues to grow its presence in the region by partnering with governments to create and lead other institutions and projects like ACPHEED and ASEAN Plus Three Emerging Infectious Diseases. In the health sector, ASEAN has a modest Health Division that manages regional health priorities, and other cross-cutting issues under its ONE Health, and Humanitarian Assistance Center. They contribute funding to targeted institutions and projects like MBDS and Equitap that further expand research capabilities, training, and policy development in the region.

ECDC objectives include both disease surveillance and health system strengthening focused on European Union Member States. In 2021, over 93% of its funding came from EU countries, again focusing on strengthening regional or national health systems as there is an appreciation of the importance of the functioning of the overall system to support public health functions of disease surveillance, tracking incidence and managing disease prevalence. None of the other institutions place an emphasis on health systems directly, but these investments play a central role in bolstering PPR, something that became apparent during the COVID-19 pandemic.

Unlike ASEAN and the ECDC’s reliance on internal funding, that is contributions from member countries, MBDS has found support from a more diverse range of funders. Institutions organized in-region, like MBDS, tend to receive most of their funding from member quotas, though external organizations often provide additional support, such as the Australia Agency for International Development (AusAid) and WHO.

In Africa, the Africa CDC contributors include United States Agency for International Development (USAID), International Financial Institutions (IFIs) such as the ADB and the World Bank, and the Global Fund. Consistent with the increased emphasis on public health in Africa, the World Bank announced a US$100 million support program for the Africa CDC aiming to increase African governments’ preparedness to handle future pandemics (World Bank 2022). In addition to the World Bank, genomic-focused donations focused on including pathogen genomics and bioinformatics for disease control and prevention in Africa, have been donated by the US CDC and private foundations and corporations, including the Bill and Melinda Gates Foundation (BMGF), Microsoft, and Illumina.

A key factor observed in MBDS and the AeHIN is institutionalized funding arrangements. In 2012, MBDS formally registered in Thailand as a foundation, helping them secure and mobilize funding from donors such as the Rockefeller Foundation, AusAid, WHO, and ASEAN (Phommasack et al. 2013). This is especially key for smaller projects, or institutions based on a Memorandum of Understanding (MOU), where goals may be aligned but resources are scarce. Institutionalization creates governing bodies and communication strategies between funders and stakeholders. It then allows for more targeted and lower-risk investments to be made by larger funding institutions, again creating a sense of security for the funders (Phommasack et al. 2013).

Over the past few decades, the Asian Development Bank (ADB), ASEAN, and Asian governments, including Republic of Korea, Japan, and PRC, have boosted financial support to organizations and projects such as GMS, CAREC, MBDS, and ACPHEED. Australia has also expanded funding across the Southeast Asia region for health by becoming a key funding and technical partner in institutions like ASEAN and MBDS. Additionally, Australia continues to support the Pacific Island community through the Pacific Community’s Public Health Division (PC-PHD), which is fully funded and organized by the Australian government. This increased participation can also be seen globally with organizations including PAHO and the Africa CDC.

While regional networks across Asia and the Pacific currently rely on a variety of funding sources and models, they may all benefit from the lessons from regional institutions’ funding of transportation. Transportation, including trade routes, infrastructure, and logistics, has been a clear focal point of policy in the Central Asia region, accounting for over 70% of CAREC’s portfolio investments and over US$2,000 billion dollars of GMS financing. As health becomes a more pressing priority, it would be worth exploring the lessons learned by the transportation experience elsewhere in partnering with the health sector. It is also worth noting that while over 70% of GMS financing comes from government funding, the private sector has increased its financing from 8% in 2017 to 15% in 2022 (GMSECP 2021). While these investments aren’t directly linked to health, they demonstrate the potential for regional networks to leverage participation and funding for common policy objectives. (See Table A1 in Appendix 1 for additional details on financing levels by institution).

Successful public health institutions of national governments offer an impetus for regionalization and allow building on national experiences and expertise to define and structure regional institutions. This was the case with the ECDC and underpins some of the success of PAHO/PASB. Governments can also look to national experiences within a region to influence and hopefully strengthen their own national health systems, which in turn can help to build momentum to find common ground for regional decisions and actions. However, the pull of national actions and priorities are often a strong counter to regional participation and collaboration.

1. Key Elements of Successful Regional Institutions and Networks

Timeline

Description automatically generatedReflecting on the evolution, organizational structure, functions, and funding mechanisms of both regional institutions and regional projects, a number of success factors emerge that have contributed to their design, sustainability, and impact. Figure 3 summarizes the success factors of regional institutions and networks.

**Figure 3: Success Factors of Regional Institutions and Networks**

Source: Aceso Global 2023

**Policy Alignment.** The policy agenda of regional institutions is essential, as they articulate the collective endeavor. The purpose, intent, focus, and achievements need to be agreed and made clear as a collective position. Vague policy or divergent views on policy and priorities sow discontent and can lead to dissolving of the entity.

**Good Governance.** A distinguishing feature of successful regional health institutional governance is the combination of centralized and decentralized hubs that perform various functions. PAHO and PASB are headquartered in Washington, DC, but delegate different functions to research centers across the Americas, allowing countries to build capacity.

Within regions, countries with strong public health capacities in particular areas can help to influence and engage the other countries, providing a strong functional basis for expanding regional capacity. For example, PRC's robust infrastructure aided in the development of the region's laboratory networks, and Thailand's expertise in epidemiology and health workforce helped in the enhancement of their human resource and surveillance capacities (Phommasack et al. 2013). The newly formed Africa CDC distributes responsibilities by sub-region, which may be beneficial in terms of scope and implementation. Other large regional institutions like ACPHEED and CAREC could consider such a model for themselves.

The secretariats of regional health institutions are often hosted by regional development banks or in countries with substantial health experience and a robust track record. The ADB hosts the Secretariat for CAREC and GMS, and other development partners are members (Ramesh 2022; Briscombe and Elfving 2022).

The still nascent ACPHEED will have three centers in Indonesia, Thailand, and Viet Nam. Each will have responsibility for cross-cutting issues such as information sharing and analytics, capacity building, and regional coordination. Indonesia will be responsible for the laboratory network and surveillance, Viet Nam will lead pandemic preparedness, and Thailand has responsibility for risk communication (Fernando 2023). It too is receiving support from the ADB.

**Funding Consistency.** A critical key to the success and sustainability of regional health institutions is having a consistent and/or a diverse source of funding. ASEAN, PASB/PAHO, ECDC, Africa CDC all have long term budget commitments for their core functions, with additional funds made available either on an ad hoc or defined basis that supplement basic financial infrastructure. There are advantages to also having access to IFI loans, donor contributions, and member contributions, as these create a broader funding base. ASEAN has remained stable and operational for decades due to serious country buy-ins through a shared vision and consistent compliance with financial contributions (ADB 2019; ASEAN 2023). That foundation can be drawn upon to support the new institution, ACPHEED, to ensure that it has committed funding, adequate and appropriate staffing, and policy support to move the PPR agenda forward.

GMS, MBDS, and the Asian eHealth Information Network (AeHIN) established themselves as foundations to formalize the collection and mobilization of funding and offer a model for other similar initiatives. For MBDS, the Rockefeller Foundation was the first funder, but other organizations, including Agence Française de Développement (AFD), AusAID, ASEAN, ADB, and Asia-Pacific Economic Cooperation (APEC), soon followed. Moreover, in 2012, MBDS incorporated as a legal entity and registered as a foundation, increasing its ability to raise funds from other donors including Development Banks (Phommasack et al. 2013).

On top of sources of funding, consistency in funding is also paramount. Securing strategic partnerships for technical and financial assistance with donors, philanthropies, research universities, and other public and private partners provides a solid foundation for both regional health institutions.

The consistency of funding affects major regional projects as well. The Asian eHealth Information Network (AeHIN), a modest project launched by WHO in 2011 to bolster disease surveillance efforts across the region, has taken advantage of its diverse partnerships. By partnering with IFIs, AeHIN receives funding from major financial institutions including the World Bank and the Asian Development Bank. Through relationships with bilateral donors, it receives additional funds from USAID, Japan International Cooperation Agency (JICA), Australia Aid, German Development Agency (GIZ), and Norwegian Agency for Development Cooperation (Norad). Finally, it has extended its reach to the private sector to garner further financial support, including a partnership with the artificial intelligence-focused Patrick McGovern Foundation. This broad network of relationships allows AeHIN to raise funding for its training, workshops, and R&D work, supporting prosperous and sustainable efforts in the region.

With help from US universities and private companies like Pfizer and Chevron, the Southeast Asia One Health University Network (SEAOHUN) brings together regional research universities to develop a multidisciplinary One Health workforce on human and animal health and the interactions of the two, through research, training, and collaboration on a range of activities. GMS also supports ONE health response to address public health threats in their region, with activities including alignment of ONE health standards, linkages of veterinary and public health workforce, and development of laboratory networks (ADB 2019).

**Draw on Lessons from Previous Successes.** Regional health organizations, both mature and new, have succeeded by drawing on previous health experiences. In response to serious infectious diseases in the Latin American region, PASB established directives that are still in effect today to organize, manage information, promote research, and support public health outcomes, thereby allowing PAHO to gain from the experiences and foundational activities of the previous decades in disease management and collaboration (Aceso Global 2021). PASB increased funding and invested in public health schools, which resulted in the establishment of public health research and development institutes, advancing the region's public health agenda in the 1980s. But both institutions were built on agreed policy priorities even if implementation details required negotiation.

**Adaptation.** Adaptability is a critical tool for regional health networks, as it gives them the flexibility to evolve alongside the issues while learning from past experiences. ASEAN has demonstrated the power of an adaptable approach to bringing manifold value to the sub-region. Since the 1980s regional health cooperation declaration that focused on security for the 10 countries, ASEAN has gradually increased its health capabilities. The 2003 SARS outbreak provided the impetus to pivot toward including health threats as part of the security agenda (Koga 2022). It created the ASEAN Emerging Infectious Disease (EID) Program and developed laboratory surveillance, information exchange, and action plans to combat SARS and other emerging infectious diseases in Southeast Asia.

ASEAN reformulated its Health Cluster to better meet the region's needs, focusing on both communicable and noncommunicable diseases, universal health coverage issues, and expanded sub-clusters related to health, such as the ONE Health and Humanitarian Assistance Center, based on previous experiences with the Emerging Infectious Disease (EID) program (Koga 2022). These kinds of continuous initiatives worked to strengthen public health in both the Latin American and South-East Asian regions by increasing investments in research, developing laboratory networks, and creating dedicated organizations to coordinate disease surveillance. In effect they have kept the focus on progress and performance in public health.

**Country Engagement and Commitment**. These two factors drive the success and sustainability of the initiatives of the regional health institutions. Greater Mekong Subregion countries are such an example, where countries have a say in the priorities of the secretariat and can count on support for major concerns of member countries (Briscombe and Elfving 2022). Members have led adjustments to policy and priorities, which brings countries together to address changing circumstances and challenges.

CAREC member countries, with assistance from ADB, accelerated the development of its health strategy as health security evolved as a priority sector during the pandemic. The Working Group on Health guided the development of the strategy, and all member countries endorsed the strategy in November 2021. The CAREC health agenda is still nascent, and the Working Group on Health only recently started to convene on site to jointly discuss priority actions for implementing the strategy (Ramesh 2022).

**Secretariat.** A well-equipped and connected Secretariat is important to the success of regional health institutions because it provides leadership, policy formulation, oversight, and support to regional activities. The disparate nature of regional entities makes a strong secretariat that coordinates and provides leadership and forges connections and collaborations across the membership and with external partners critical for success and survival.

Both CAREC and GMS attribute regional coordination and collaboration success to the platform's convening power, and its financial and network resources. As CAREC seizes opportunities in the region's health and economic sectors, ADB plays an important role in providing useful networks in non-health sectors involved in the region, as well as other regional health institutions with which ADB supports or collaborates (Ramesh 2022). GMS credits ADB's strong convening power in bringing Greater Mekong Subregion countries together to develop and align strategies that support individual countries and regional health priorities as confirmed in the Regional Health Cooperation Strategy for the GMS 2019-2023. Similarly, ACPHEED is benefiting from support and advice from the ADB.

1. Recommendations for Regional Public Health Institutions and Implications for the Asia Region

PPR for pandemics requires a broad set of initiatives that entail:

* Collaboration to mitigate the likelihood of a disease outbreak;
* Coordinated efforts on prevention, that include surveillance, testing and tracking infectious, among other actions that involve cross border cooperation and collaboration; and,
* Organized approaches to responses that include alerting all participants to the seriousness of an emerging outbreak, harmonization of policies and actions to stem the spread and control the pandemic, and coordinated initiatives that blunt the spread and mitigate the effects of the pandemic.

The failure to act collectively on these actions was why COVID-19 was so lethal. The inevitable nature of future pandemics poses a major issue for all countries and an opportunity to address gaps in regional health security.

The implications for Asia include the following:

**Strengthen public health agendas in regional initiatives**. As discussed above, the region has a number of evolving efforts both standalone such as ACPHEED, but also the “clusters” attached to other regional organizations. Strengthening these efforts through technical assistance and joint activities with established regional institutions could further enhance their capacities and provide on-the-job exposure to how institutions take on specific functions. Ensuring continuous funding will be critical.

**Intensify learning from regional institutions that are restructuring based on the COVID-19 experience.** The ADB already provides critical support, but this could be deepened and expanded by linking with established regional organizations, such as the US CDC (as it is a national entity that coalesces 50 independent states) or ECDC. Both institutions have had to adapt to failures in the preparation and response to COVID-19, and those lessons, and the process undertaken to assess performance could be useful to the nascent regional institutions in Asia. Specifically, this kind of engagement can bolster adaptation within Asian regional networks and institutions.

**Strengthen projects and networks to support institutions.** The role of networks cannot be underestimated in building regional public health capacity for PPR. The ADB is already doing so, and more can be done. Indeed, identifying gaps would help to ensure broad based investments. Shoring up promising initiatives and expanding successful ones could reinforce the role and impact of regional institutions.

**Strengthen or reward existing institutions, projects and other entities that move toward collaboration and institutional leadership**. Finding creative ways to reinforce and reward innovation, effective and cross-country programs will offer incentives for further efforts, and signal that collaborative initiatives are valuable to the region. It can be as simple as an annual reward event with modest financial awards or support for needed infrastructure.

**Building and expanding R&D initiatives across the region.** Preparing for thenext pandemicentails collaboration, but response capability will require regional capacity to produce vaccines and treatments. The concentration of both R&D and production in Europe and the US was unfortunate, and a clarion call for regions to take more initiative to ensure regional capacity to both develop and produce treatments.A good deal of capacity already exists in the region, but it is concentrated in a few countries. Expanding that capacity and finding ways to collaborate across borders can improve the situation for the entire region.These tasks should be on the regional agenda.

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Appendix 1: Additional Information on Regional Institutions

ADB = Asian Development Bank, AUS = Australia, BMGF = Bill and Melinda Gates Foundation, CDC = Centers for Disease Control and Prevention, EU = European Union, Gavi = Global Alliance for Vaccines and Immunisation, TGF = The Global Fund, PASB = Pan American Sanitary Bureau, PRC = People’s Republic of China, PPR = prevention, preparedness, and response, R&D = research and development, UNDP = United Nations Development Programme, UNICEF = United Nations Children’s Fund, USA = United States of America, USAID = United States Agency for International Development, WB = World Bank, WHO = World Health Organization.

Source: ADB 2019; ADB 2023; Africa CDC 2023; ASEAN 2020; ASEAN 2021; CAREC 2022; ECDC 2023; GMSECP 2021; MBDS 2023; PAHO 2011; PAHO 2023; PHD 2023.

|  |  |  |
| --- | --- | --- |
| **Table A1: Additional Information on Regional Institutions** | | |
| **Institution**  **(Founded date)** | **Structure** | **Funding (US$)** |
| **Asia** | | |
| Association of Southeast Asian Nations (ASEAN) (1967) | * Secretary-General * Secretariat * 500 Staff | * $1.69B (2009-2022) * Seed and Projects Funds |
| Central Asia Regional Economic Cooperation (CAREC) (2001) | * Ministerial Conference * Secretariat * 50-200 Staff | * $45.7B (2001-2022)   + 38% ADB   + 22% CAREC governments * 40% other development institutions |
| Greater Mekong Subregion (GMS) (1992) | * ADB Secretariat * Working Group on Health | * $80B in financing (2018-2022)   + $19.4M in Health and other Human Resource Development   + Multilateral, Bilateral and Private Sector Partners |
| The Pacific Community’s Public Health Division (PC-PHD) (1947) | * Office of the Director Team (PHD) * <50 Staff | * Major Funding Partners include AUS, European Union, France, USA, and New Zealand |
| **Outside Asia** | | |
| Africa Centres for Disease Control and Prevention (2017) | * Governing Board * Secretariat * Regional Collaborating Centers (RCC) | * ADB, BMFG, CDC, TGF, USAID, WHO, WB |
| European Centre for Disease Prevention and Control (ECDC) (2004) | * Director * Management Board * 290 Staff | * $179.6M (2021)   + $165.6M EU countries   + $2.1M EU Economic Area * $11.4M Misc. |
| Pan American Health Organization (PAHO) (1960) PASB (1902) | * Sanitary Conference * Directing Council * Executive Committee * 850-900 Staff | * Member quotas * WHO * Others: BMGF, EU, Gavi, UNICEF, UNDP, Republic of Korea |

Appendix 2: Abbreviations

|  |  |
| --- | --- |
| ACPHEED | ASEAN Centre for Public Health Emergencies and Emerging Diseases |
| ADB | Asian Development Bank |
| AeHIN | Asian eHealth Information Network |
| AFD | Agence Française de Développement (French Development Agency) |
| Africa CDC | Africa Centres for Disease Control and Prevention |
| ANHSS | Asia Pacific Network for Health Systems Strengthening |
| APEC | Asia-Pacific Economic Cooperation |
| ASEAN | Association of Southeast Asian Nations |
| AUS | Australia |
| AusAID | Australia Agency for International Development |
| BMGF | Bill and Melinda Gates Foundation |
| CAREC | Central Asia Regional Economic Cooperation |
| CSO | Civil society organizations |
| ECDC | European Centre for Disease Control and Prevention |
| EID | Emerging Infectious Diseases |
| EMA | European Medicines Agency |
| Equitap | Equity in Asia-Pacific Health Systems |
| EU | European Union |
| Gavi | Global Alliance for Vaccines and Immunisation |
| GDP | Gross domestic product |
| GIZ | German Development Agency |
| GMS | Greater Mekong Subregion |
| H1N1 | Swine Flu |
| HFG | USAID’s Health Finance and Governance Project |
| IDRC | International Development Research Centre |
| IFI | International Financial Institutions |
| INGO | International non-governmental organizations |
| IGO | Intergovernmental organizations |
| JICA | Japan International Cooperation Agency |
| Lao PDR | Lao People’s Democratic Republic |
| MBDS | Mekong Basin Disease Surveillance |
| MOU | Memorandum of Understanding |
| Norad | Norwegian Agency for Development Cooperation |
| OIE | World Organization for Animal Health |
| P4H | Providing for Health |
| PAHO | Pan American Health Organization |
| PASB | Pan American Sanitary Bureau |
| PC-PHD | Pacific Community’s Public Health Division |
| PPR | Prevention, Preparedness, and Response |
| PRC | People’s Republic of China |
| R&D | Research and development |
| RCC | Regional Collaborating Centers |
| SARS | Severe acute respiratory syndrome |
| SEALAB | South-East Asia Lab Network |
| SEAOHUN | Southeast Asia One Health University Network |
| TB | Tuberculosis |
| TGF | The Global Fund |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| UNICEF | United Nations Children’s Fund |
| UNSIC | United Nations System Influenza Coordination |
| US CDC | United States Centers for Disease Control and Prevention |
| USA | United States of America |
| USAID | United States Agency for International Development |
| WB | World Bank |
| WBI | World Bank Institute |
| WHO | World Health Organization |
| WRO | World Research Organization |

References

A. Briscombe and R. Elfving. December 19, 2022. ADB. Interview by Aceso Global.

Aceso Global. 2021. *Note on Global Pandemic Preparedness: Lessons from the History of the Pan American Sanitary Bureau*. White Paper. Washington, DC: Aceso Global.

ADB. 2019. *ASEAN**Infrastructure Fund: Financing Infrastructure for Growth and Development.* Manila. https://www.adb.org/sites/default/files/publication/221281/asean-infrastructure-fund.pdf

ADB. 2019. *Greater Mekong Subregion Health Cooperation Strategy 2019–2023*. Manila. http://dx.doi.org/10.22617/TCS190210

ADB. 2023. *ASEAN Infrastructure Fund.* Manila. <https://www.adb.org/what-we-do/funds/asean-infrastructure-fund>

AeHIN. 2023. *Asia eHealth Information Network*. <https://www.asiaehealthinformationnetwork.org/>

Africa CDC. 2023. *Africa CDC: About Us.* Africa Centres for Disease Center and Control. https://africacdc.org/about-us/

ANHSS. 2023. *Asia Pacific Network for Health Systems Strengthening.* <http://www.anhss.org/>

ASEAN. 2020. *The ASEAN: Stronger Health Systems Our Lifeline in a Pandemic.* The ASEAN, Issue 6. https://asean.org/wp-content/uploads/2021/08/The-ASEAN-Special-Edition-Nov-Dev-2020.pdf

ASEAN. 2021. *Investing in ASEAN.* Association of Southeast Asian Nations. Allurentis Limited. https://asean.org/wp-content/uploads/2021/09/invest-in-asean-2021-2022.pdf

ASEAN. 2023. *ASEAN Legal Instruments.* Association of Southeast Asian Nations. https://agreement.asean.org/media/download/20131230231809.pdf

B. Phommasack et al. 2013. Mekong Basin Disease Surveillance (MBDS): a trust-based network. *Emergency Health Threats* (6). DOI: 10.3402/ehtj.v6i0.19944

CAREC. 2022. *CAREC Project Portfolio*. https://www.carecprogram.org/?page\_id=13630

ECDC. 2023. *European Centre for Disease Prevention and Control.* <https://www.ecdc.europa.eu/en/about-ecdc>

Equitap. 2023. *Equitap: Equity in Asia-Pacific Health Systems.* <http://www.equitap.org/index.html>

F. Fernando. January 18, 2023. ACPHEED. Interview by Aceso Global.

GHS Index. 2019. *Global Health Security Index: Building Collective Action and Accountability*. GHS Index. <https://ghsindex.org/wp-content/uploads/2020/04/2019-Global-Health-Security-Index.pdf>

GMSECP. 2021. *Regional Investment Framework 2022: Fourth Progress Report and Update.* Greater Mekong Subregion Economic Cooperation Program. <https://www.greatermekong.org/sites/default/files/RIF%20Third%20Update_%202020_%20Main%20%28Overview%29.pdf>

Harvard Law School. 2022. *Intergovernmental Organizations (IGOs).* https://hls.harvard.edu/bernard-koteen-office-of-public-interest-advising/about-opia/what-is-public-interest-law/public-service-practice-settings/international-public-interest-law-practice-setting/intergovernmental-organizations-igos/

J. Kiernan. 2002. *1902 - 2002: 100 Years of Pan-Americanism.* PAHO. https://www.paho.org/en/who-we-are/history-paho/1902-2002-100-years-pan-[americanism](https://www.paho.org/en/who-we-are/history-paho/1902-2002-100-years-pan-%09americanism)

K. Koga. 2022. Countering emerging infectious diseases and COVID‑19: the development of ASEAN's institutional arrangements and international cooperation. In A. P. van der Veere, F. Schneider & C. Y.-p. Lo eds. *Public Health in Asia during the COVID‑19 Pandemic: Global Health Governance, Migrant Labour, and International Health Crises* (pp. 45‑61). Amsterdam University Press. <https://hdl.handle.net/10356/155557>

K. Ramesh. December 15, 2022. CAREC. Interview by Aceso Global

M. G. Palacios 2020. Pan American Health Organization in intensive care. *openDemocracy.* https://www.opendemocracy.net/en/democraciaabierta/pan-american-health-organization-in-danger/

M. Moore et al. 2012. *Sustainability of Sub-Regional Disease Surveillance Networks.* Global Health Governance 5, no. 2.

MBDS. 2023. *Mekong Basin Disease Surveillance*. <https://mbdsnet.org/about-us/>

PAHO. 2011. *Overview.* PAHO. https://www.paho.org/hq/dmdocuments/2011/OD338--Overview-e.pdf

PAHO. 2023. *Who We Are*. Pan American Health Organization. https://www.paho.org/en/who-we-are

Patrick J. McGovern Foundation. 2021. *Foundation announces new grants to accelerate potential of digital health.* News & Insights. <https://www.mcgovern.org/foundation-announces-new-grants-to-accelerate-digital-health/>

PHD. 2023. *SPC Public Health Division*. <https://phd.spc.int/>

S. Burwell and F. F. Townsend. 2020. *Improving Pandemic Preparedness Lessons From COVID-19.* Independent Task Force Report No. 78. Council on Foreign Relations. <https://www.cfr.org/report/pandemic-preparedness-lessons-COVID-19/pdf/TFR_Pandemic_Preparedness.pdf>

S. Greer et al. 2022. *Everything you always wanted to know about European Union health policies but were afraid to ask: Third Revised Edition.* European Observatory on Health Systems and Policies. https://eurohealthobservatory.who.int/publications/i/everything-you-always-wanted-to-know-about-european-union-health-policies-but-were-afraid-to-ask-third-revised

S. Wiradji. 2022. G20 Health Ministers’ Meeting delivers six key actions for upcoming Leaders’ Summit. *The Jakarta Post.* <https://www.thejakartapost.com/business/2022/11/01/g20-health-ministers-meeting-delivers-six-key-actions-for-upcoming-leaders-summit.html>

SEALAB. 2023. *South-East Asia Lab Network.* <https://www.sealab.asia/>

SEAOHUN. 2023. *Southeast Asia One Health University Network.* <https://www.seaohun.org/>

WHO. 2023. *Pacific Islands Surveillance.* WHO Western Pacific Region. <https://www.who.int/westernpacific/emergencies/surveillance/pacific-islands-surveillance>

World Bank. 2022. Africa Centres for Disease Control Receives a $100 Million Boost from the World Bank to Strengthen Continental Public Health Preparedness. Press Release. 21 July.