ACCEPTED ABSTRACTS/ ABSTRAK DITERIMA

CLUSTER 1: REGULATION, POLICIES AND INSTITUTION / REGULASI, KEBIJAKAN DAN KELEMBAGAAN, COORDINATOR / KOORDINATOR : MOHAMAD MOVA AL'AFGHANI, TEAM / TIM : ANINDRYA NASTITI				
NO	**NAME /NAMA**	**UNIVERSITY / INSTITUTION UNIVERSITAS / LEMBAGA**	**TITLE / JUDUL**	**ABSTRACT / ABSTRAK**
1	Haekal Al Asyari	Faculty of Law, Universitas Gadjah Mada	Hak Atas Air Dalam Perspektif Hukum Hak Asasi Manusia: Konsep Ius Constituendum Dan Kaitannya Terhadap *Sustainable Development Goals*	Water has always been an important part of human life. In the last few decades, water polemics have increased and the main problem is due to the absence of effective water management and water security (water protection) instruments. The lack of access to clean water always occurs and at its worst, also has a serious impact on human rights aspects and is a major obstacle to sustainable development. As an archipelago surrounded by waters, Indonesia has a unique legal framework in governing water management. Constitutionally, it is stated that the earth, water, and the wealth contained therein are controlled by the state and used as much as possible for the prosperity of the people. In the international scope, the water sector is characterized by a very complex and problematic situation. The operation of water services, the legal framework and water conditions are key issues for this problem, which are not only regional, but exists in most developing countries. The right of every human being to safe drinking water and basic sanitation must be recognized and realized. This research aims at analysing the right to water from the concept of Ius Constituendum and its relationship with the sustainable development goals. This research will employ a normative method, where it seeks to analyse the existing legal framework as well as literature resource. The result of this research found that the governance of water management in Indonesia; while it is consistent with the Constitution, there are still a lack of implementation in terms of ensuring the access to clean and sanitized water. This also reflects the Country's position that is far from the targeted Sustainable Development Goals.
2	Harison Citrawan	BRIN	The chronotope of city: Exploring the jurisdictional game of water privatization in Jakarta, Indonesia	Abstract The global water remunicipalization movement exemplifies an intricate relationship between space, time and law. For jurists this kind of relationship is investigated through a technical form of jurisdiction. This paper examines the role of law's temporality in understanding city's water jurisdiction. Using Bakhtin's literary concept of chronotope—read in this context as the ways legal actors use legal techniques to synthesize the spatial and temporal frame of an inquiry—this paper argues that city is an aesthetic representation of jurisdiction over water resources construed upon a spatiotemporal configuration of lived experience. This study aims to serve several purposes: (1) to extrapolate the concept of law's temporality into the discourse of spatial jurisdiction, (2) to identify some aesthetic elements of a city informed by linguistic aspects used by legal actors in legal cases, and (3) to investigate the jurisdictional games played in relation to city's resource management. Sketching the arguments from an interdisciplinary approach, this paper focuses on how judges frame space, time and affect related to water (mis-)management in the Jakarta Water Privatization citizen lawsuit in 2015-2018. This lawsuit outlines the concept of jurisdictional game, that is, a game in which water (spatial) jurisdiction is essentially contingent upon law's multiple temporalities of the citizens. Arguably, such temporal multiplicity asserts a conflation of citizens' lived experience in the past, present and future.

				Based on this citizen lawsuit, I contend that Jakarta's water (mis-)management is essentially an image of the spatiotemporal configuration of lived experience shaped by various forms of jurisdictional technologies, including constitutional segregation of public and private authorities, universality of right (to water), and the concept of effectiveness within the liberal-political economy. The case also demonstrates overlapping affective dialogues or interactions between qualitative risks and resource management projections, as well as trauma of past authoritarian regime. Consequently, while the question of water remunicipalization has been revolving around the who and what of governance, an observation about the court's jurisdictional game suggests that the inquiry into how governance is exercised would be no less important.
3	Putri Sortaria	SNV Netherlands Development Organisation Indonesia		Latar Belakang dan Pernyataan Masalah Dalam penciptaan kebutuhan masyarakat akan sanitasi aman, SNV memahami pentingnya institusionalisasi dalam proses Komunikasi Perubahan Perilaku (KPP). Melalui program WASH SDG, SNV menekankan bahwa pencapaian sanitasi aman dan proses perubahan perilaku bukan hanya tanggung jawab sektor kesehatan, melainkan multi-sektor. Oleh karenanya, institusionalisasi di dalam lembaga pengampu serta kolaborasi multi-pihak di tingkat kota esensial untuk prioritisasi perencanaan dan penganggaran penciptaan kebutuhan, yang tujuan akhirnya diterjemahkan menjadi peningkatan akses sanitasi. Pemerintah Indonesia telah berkomitmen untuk mencapai akses sanitasi layak sebesar 90%, termasuk 15% sanitasi aman di tahun 2024[1]. Di Kota Bandar Lampung dan Metro, akses sanitasi aman saat ini adalah 0%[2] dan 6%[3] secara berurutan. Angka ini menunjukkan kesenjangan yang tinggi antara akses saat ini dengan target kedua kota untuk mencapai 12% sanitasi aman di tahun 2026. Walaupun kedua kota tersebut sudah berupaya meningkatkan kesadaran masyarakat dengan target perilaku yang beragam (misal: kebutuhan sanitasi dan perilaku cuci tangan pakai sabun), tetapi belum ada strategi KPP perkotaan yang terstruktur, berbasis bukti, dan berfokus pada tujuan akhir [4]. Hal tersebut menyebabkan kegiatan perubahan perilaku hanya berpusat pada terlaksananya kegiatan tanpa melihat hasil jangka panjang dan dampaknya terhadap masyarakat. Selain itu, keberlanjutan dari pelaksanaan dan pengarusutamaan di insitusi pengampu, serta terbatasnya pemantauan dan evaluasi yang konsisten masih menjadi tantangan. Metodologi dan Hasil Di tahun 2021, SNV memfasilitasi pembentukan Kelompok Kerja (Pokja) KPP di tingkat kota yang melibatkan seluruh institusi kunci dalam mewujudkan akses sanitasi aman, antara lain Badan Perencanaan Daerah (Bappeda), Dinas Kesehatan, Dinas Lingkungan Hidup, Dinas Pekerjaan Umum dan Perumahan Rakyat, Dinas Sosial, Dinas Pemberdayaan Perempuan dan Perlindungan Anak. Kolaborasi dan partisipasi aktif dari semua anggota Pokja KPP berhasil merumuskan tonggak-tonggak capaian kunci untuk mencapai target dan indikator sanitasi aman. Dalam masa fasilitasi dan pendampingan, SNV memberikan peningkatan pengetahuan dan keahlian mengenai topik sanitasi dan kebersihan di tingkat perkotaan. Tujuan dari peningkatan kapasitas tersebut adalah agar masing-masing dinas yang terkait paham akan peran dan tanggung jawabnya atas pemenuhan Standar Pelayanan Minimum (SPM) untuk memenuhi hak masyarakat kota akan akses sanitasi. Hasil dari pendampingan dan peningkatan kapasitas adalah adanya pengembangan strategi KPP tingkat kota yang berisi rencana kerja semua institusi untuk menciptakan kebutuhan sanitasi aman sesuai dengan tugas dan fungsinya

				masing-masing. Setelah strategi KPP disosialisasikan ke seluruh dinas terkait, kemudian SNV memberikan pelatihan peningkatan keahlian KPP Bersama dengan pokja KPP kepada masyarakat, kader kesehatan, dan tokoh masyarakat. Bersamaan dengan pengembangan dan sosialisasi strategi KPP, kami juga melakukan implementasi di tingkat kelurahan di Kota Bandar Lampung dan Kota Metro. Di Kota Bandar Lampung melalui kegiatan Kampung Hijau kami berusahan menarik perhatian masyarakat tentang isu sanitasi aman dan kebersihan tangan melalui kebersihan lingkungan, karena isu kebersihan lingkungan terutama manajemen persampahan merupakan isu yang masih marak terjadi. Bersama dengan kader kesehatan dan kelompok pemuda, di lokasi Kampung Hijau di Kota Bandar Lampung membuat kegiatan "Sedekah Sampah" yang merupakan upaya mengumpulkan sampah potensi daur ulang ke bank sampah, dan pendapatan yang dihasilkan dikumpulkan untuk perbaikan tangki septik standar atau penyedotan tinja. Di Kota Metro melalui inisiasi Bappeda Kota dan kelompok wanita PKK (Pemberdayaan dan Kesejahteraan Keluarga), dilakukan mekanisme arisan sedot tinja (ARSETI) yang mana kelompok perempuan di tingkat kelurahan mengumpulkan uang dan arisan untuk sedot tinja. Hingga saat ini di Kota Metro sudah terbentuk kelompok ARSETI yang sedang melakukan putaran arisan untuk sedot tinja. Diskusi dan Rekomendasi Komunikasi Perubahan Perilaku (KPP) merupakah bagian yang tidak terpisahkan dari upaya pemenuhan akses sanitasi aman. Selain itu, KPP juga bukan hanya tanggung jawab dari Dinas Kesehatan untuk promosi kesehatan, tetapi memerlukan kolaborasi dari berbagai dinas dan pihak terkait. Maka dari itu perlu adanya kolaborasi multi-pihak agar bisa tercapai tujuan akhir peningkatan akses sanitasi aman yang berkelanjutan. Kemudian, untuk memperkuat tata kelola tersebut bahwa dengan adanya komitmen dan pengesahan pembentukan kelompok multi-pihak menjadi penting. Dengan begitu setiap pihak yang terlibat dapat memahami dengan jelas peran dan tanggung jawabnya untuk pelaksanaan KPP sanitasi aman sesuai dengan tugas pokok dan fungsinya. Kesimpulan Pembentukan Pokja KPP ini diharapkan dapat memperkuat kolaborasi multi-pihak dalam pencapaian target sanitasi aman kota. Bukan hanya kolaborasi, pembentukan kelompok kerja ini turut mendorong keterwakilan yang setara dari berbagai institusi pemerintahan. Tujuan akhirnya, kami berharap dapat mendorong keterbukaan dan akuntabilitas pemerintah kota dalam sinkronisasi strategi KPP ke dalam upaya yang lebih besar dalam mempercepat pencapaian akses dan layanan sanitasi aman yang berketahanan iklim dan inklusif. Daftar Pustaka 1. Indonesia National Medium-Term Development Planning 2020-2024 2. City Government of Bandar Lampung, 2022 3. City Government of Metro, 2022 4. SNV Indonesia Baseline Study in Bandar Lampung, Metro, and Tasikmalaya, 2018
4	Dewa Ayu Putu Eva Wishanti	University of Leeds	Politics of Decentralisation of Water Governance Reform in West Java, Indonesia	This article focuses on identifying the underlying political barriers of water governance decentralisation in Indonesia, mainly in the context of public service reform. The research question is 'how does decentralisation affect water governance reform in Indonesia?'. The urgency of this question is on the gap of preparedness among regions in Indonesia amidst water governance reform directive, indicated by privatisation and irrigation reform. This article also adds political spectrum of explanation to the current water management perspectives. Moreover, this article focuses on subnational domain, particularly West Java to address the central inquiry more empirically.

				West Java province is selected as a case study due to national importance of its water resources potential, as well as its engagements with various water and sanitation projects both from national and international fundings. Politically, close proximity between West Java and Jakarta as the capital city poses particular contention in water allocation politics and regulations. About 3000 manufactures and more than 30 million people depend on West Java's water supply and its hydropower generation. The online and on-site fieldwork was conducted in March to July 2021 and March to May 2022. They are in the form of interviews with local and national authorities, mainly from related ministries and water institutions. Policymakers from the parliament down to civil society actors were also interviewed, accompanied by Data will be gathered from a qualitative case study of West Java province, examining how local networks operate in the water sector. Focusing on one province will allow for an in-depth examination of institutional decentralisation within a country, due to bureaucratic complexity in decentralised Indonesia. Decentralisation of authority from provincial to village level causes tensions in river basins, water resource ownership, and ODA-related project implementations. For future research, findings from an in-depth case study can be compared with other provinces in Indonesia, where different models may exist. The purpose of the case study will be instrumental, by bringing new insights into an issue area to advance an existing framework (Baškarada, 2014). The complexity of decentralisation and the growth of water stakeholders in Indonesia are also evident in the rising number of subnational actors in Indonesia working with donor representatives, development organisations, national executive institutions, and national water institutions. Regional planning boards, provincial water enterprises, private water business, river basin organisations (RBOs), water user associations (WUAs), NGOs as donor partners, and epistemic community also actively engage in water reform processes at the subnational level. These range of actors will be best investigated in a provincial level case study with middle-management entities that can connect the global, national and the smallest units of government. Decentralised water service provision can be observed in such processes, including desalination, drinking water, reclamation, irrigation water conservation, imported pipe water, rainfall tank, rainstorm harvesting, or groundwater bores (Mankad & Tapsuwan, 2011; Moglia et al., 2011). The selection basis of the case study is in the critical features of the cases, where they have a strategic importance to the general problems (Flyvbjerg, 2001). Furthermore, institutions are built through the construction of a set of values and norms, linked to standardised behavioural roles of states. However, ambiguity in the norms frequently lead political actors into non-compliance and disintegration (Engelkamp & Glaab, 2015), particularly in the sub-national level. In this article, IWRM and global foreign assistance governance are positioned as networking entities of global knowledge utilisation that involves transnational advocacy networks, global public policy networks, and transnational executive networks (Stone, 2013). This is where case studies are substantial, as localised cases will reflect to what extent those networks of water governance operate across the local level. Water governance reform in Indonesia during the democratic transition (1998-2004), in the context of sectoral priorities, is characterised by the privatisation of drinking water service and decentralisation of irrigation management. Both of these sectors were directed and funded by The World Bank despite the state of public debt and fragile incentive structure for development. Decentralisation of government was expected to bring a more competitive model of water governance amidst public pressure to evenly distribute access to clean water. From general decentralisation law to

				sector-specific regulations, multi-tier laws and regulations were legalised to formalised power-sharing in water governance. Keywords: decentralisation, water governance, water management, West Java, water politics
5	Ardianto Budi Rahmawan ; Gabriela Eliana	Faculty of Law Universitas Gadjah Mada; Faculty of Law Universitas Gadjah Mada	Mitigating Aquifer Crisis in Indonesia's New Capital, Nusantara: Problems and Lessons Learned from Singapore	Water availability is crucial to every nation's capital. With the appointment of Nusantara as Indonesia's new capital through Law No. 3 Year 2022, concerns regarding water availability and aquifer crisis arise especially as Nusantara is located on top of medium- to low-productivity aquifers. Before Nusantara was elected to become the new capital's location, the local government of East Kalimantan has also been exposed issues such as water availability and access to clean water. The shift of capital would entail the utilization of groundwater resources in Nusantara, which pose huge aquifer crisis risks. In contrast, Singapore, a city-state with limited aquifers, does not have problems with water availability and aquifer crisis due to its water management policy that could accommodate its citizens' water demands. In this paper, the authors conducted a comparative analysis on Singapore's water management policies to provide recommendations on the shift of Indonesia's capital to ensure the fulfillment of water demands and mitigate aquifer crisis. Using a normative legal method, this paper portrays the lessons that can be taken from Singapore in ensuring water availability amidst its limited water resources and high demand of water. The authors argue that the Indonesian government must improve its policies and regulations, keeping in mind lessons that can be learned from Singapore, to ensure water availability whilst preventing the possibility of damaging groundwater resources.
6	Nasrul Putra	Institut Teknologi Sumatera	PREDIKSI PENGEMBANGAN SISTEM PENGELOLAAN AIR LIMBAH DOMESTIK (SPALD) DI PULAU SUMATERA TAHUN 2030 DENGAN PENDEKATAN SPASIAL	PENDAHULUAN Pulau Sumatera merupakan salah satu pulau dengan kepadatan penduduk terbesar kedua di Indonesia setelah Pulau Jawa, tentunya akan sangat berpengaruh dalam proses percepatan pembangunan di Indonesia. Hal ini terlihat dengan kontribusi Pulau Sumatera dalam Produk Domestik Bruto (PDB) pada capaian kumulatif 2015-2018 sebesar 21,58% diurutan kedua setelah Pulau Jawa dengan besarnya 58,49% (Kementerian PPN/Bappenas, 2019). Dari segi lingkungan dan sanitasi Pulau Sumatera memiliki akses terhadap layanan sanitasi layak pada tahun 2020 dengan rata-rata 78,1% lebih rendah dibanding Pulau Jawa sebesar 82,88% (Badan Pusat Statistik, 2021). Artinya Pulau Sumatera masih tertinggal dibanding Pulau Jawa yang notabene menjadi pusat perekonomian di Indonesia berdasarkan data di atas. Sementara target 2030 dalam percepatan Sustainable Development Goals (SDGs) adalah 100% akses sanitasi layak dan 53,71% sanitasi aman (Kementerian PPN/Bappenas, 2018). Pemilihan Pulau Sumatera sebagai wilayah studi tidak terlepas terhadap potensi yang dimiliki masing-masing daerah jika dapat diintegrasikan satu dengan yang lainnya, maka dapat mendorong percepatan pembangunan nasional demi tercapainya pembangunan yang berkelanjutan. Studi ini bertujuan mengidentifikasi dan menganalisis sistem sanitasi (pengeloaan air limbah domestik) dengan menganalisis potensi sanitasi melalui pemetaan proyeksi persebaran penduduk berdasarkan tata guna lahan untuk mendapatkan kepadatan penduduk yang nantinya digunakan untuk memperoleh prediksi persebaran sanitasi setiap kabupaten/kota nya dalam mencapai target pembangunan berkelanjutan (SDGs) tahun 2030 di Pulau Sumatera. Ini tentunya mampu menjadi bahan pertimbangan kepada pemerintah dalam mengambil kebijakan untuk mengimplementasikan target rencana pengelolaan air limbah domestik guna mempercepat pembangunan daerah yang berkelanjutan. METODE

				Dalam melakukan pendekatan, dasar pemilihan, asumsi dan perhitungan, maupun prosedur atau langkah-langkah didasarkan pada referensi maupun studi terdahulu, dokumen-dokumen terkait acuan populasi dan proyeksi penduduk, akses dan kondisi sanitasi, data spasial meliputi data tata guna lahan, jalan, dan peta dasar Pulau Sumatera, serta kebijakan dan regulasi yang merujuk kepada arah dan target Rencana Pembangunan Jangka Menengah Nasional (RPJMN) serta pembangunan yang berkelanjutan (SDGs). Analisis Statistik dan Spasial Penentuan sistem sanitasi (SPALD) berdasarkan kepadatan penduduk sesuai dengan penelitian terdahulu oleh Kersten dkk (2015 dan 2016) dan Permen PUPR No 04/PRT/M/017 Tahun 2017 dengan kepadatan penduduk sebagai kategori utama penentuan SPALD. Maka, perlu menghitung proyeksi penduduk untuk target prediksi tahun 2030 dalam upaya percepatan SDGs yang dianalisis persebarannya berdasarkan tata guna lahan menggunakan pembobotan kelas lahan untuk penggambaran potensi penduduk pada setiap lahan dengan pendekatan spasial pada Sistem Informasi Geografis (SIG). Pembobotan ini berdasarkan nilai selisih dari fungsi sosial dan ekonomi (Fawaid, 2018), sehingga akan diperoleh persebaran penduduk pada wilayah permukiman dan non permukiman (daerah persawahan, pertambangan, perkebunan, tambak, hutan, dan sejenisnya) untuk mendapatkan kepadatan penduduk yang nantinya akan digunakan dalam menentukan kategori sistem sanitasi yang direncanakan. Dasar Pemilihan Sistem Pengeloaan Air Limbah Domestik (SPALD) Dasar pemilihan SPALD yang didasarkan pada pendekatan kepadatan penduduk suatu wilayah yang dikategorikan menjadi SPALD-Setempat skala individu (SPALD-S individu) dengan kepadatan penduduk <10.000 orang/km2 (wilayah non permukiman), SPALD-Setempat skala komunal (SPALD-S komunal) dengan kepadatan penduduk >10.000 orang/km2 (wilayah non permukiman) dan < 15.000 (wilayah permukiman), serta SPALD-Terpusat (SPALD-T) dengan kepadatan penduduk >15.000 (wilayah permukiman). HASIL DAN PEMBAHASAN Hasil yang diperoleh berdasarkan pertimbangan kepadatan penduduk pada masing-masing kabupaten/kota yang dianalisis dengan pendekatan spasial. Di mana penduduk Pulau Sumatera tersebar di wilayah permukiman dengan kepadatan penduduk rata-rata 1.633,02 orang/km2 (93,53%) dan non permukiman dengan kepadatan penduduk rata-rata 113,05 orang/km2 (6,47%). Dari hasil tersebut menjadi patokan untuk menentukan sistem sanitasi (SPALD) yang tepat untuk setiap kabupaten/kota yang kemudian diselaraskan dengan program pemerintah dalam Rencana Pembangunan Jangka Menengah Nasional (RPJMN) 2020-2024 terhadap daerah prioritas untuk pembangunan SPALD-T. Didapatkan hasil pada tahun 2030 untuk mencapai akses sanitasi layak 100% di Pulau Sumatera diperoleh komposisi dengan target SPALD-S individu sebesar 69,07%, SPALD-S komunal sebesar 16,56%, dan SPALD-T sebesar 14,37% yang diperoleh berdasarkan total jumlah pengguna pada setiap jenis SPALD nya. Melihat dari hasil tersebut, beberapa wilayah kabupaten/kota di Pulau Sumatera sudah mulai melakukan upaya dalam rangka peningkatan akses sanitasi layak, diantaranya seperti di Kota Pekanbaru dengan adanya pembangunan Instalasi Pengolahan Air Limbah (IPAL) domestik terpusat dari program Metropolitan Sanitation Management Investment Project (MSMIP) pada November 2018 yang diperkirakan rampung pada tahun 2022 (Annisa, 2021). Kemudian juga adanya pembangunan IPAL di Kota Palembang dengan kapasitas 20.300 m3/hari yang melayani 21.700 sambungan rumah (SR) melalui program Palembang City Sewerage Project (PCSP) pada akhir tahun 2020 dan diperkirakan rampung pada tahun 2022 (Kementerian PUPR, 2020). Namun, hal ini tentunya masih belum mencukupi

				kebutuhan target tahun 2030 dari segi kapasitas dan cakupan pelayanan serta aspek lainnya. Maka dari itu, dari hasil yang sudah diperoleh terkait prediksi target capaian untuk setiap jenis SPALD, dapat menjadi bahan pertimbangan dan acuan yang terarah oleh pemerintah setempat dalam upaya melakukan percepatan peningkatan akses sanitasi. Sehingga dapat mengukur sudah sejauh mana pelayanan yang sudah dicapai dari program-program yang ada serta seberapa besar target yang perlu diupayakan pemerintah untuk mencapai target pada tahun 2030. KESIMPULAN Sistem Pengelolaan Air Limbah Domestik (SPALD) di Pulau Sumatera pada tahun 2030 merupakan 100% sanitasi layak dengan percepatan berdasarkan capaian rata-rata sanitasi layak di Pulau Sumatera pada tahun 2020 sebesar 78,1% dengan pengelolaan air limbah domestik minimal adalah pengolahan di tempat (SPALD-S) baik skala individu maupun komunal. Berdasarkan skenario perhitungan sistem sanitasi (SPALD) yang direkomendasikan pada wilayah kabupaten/kota setiap provinsi di Pulau Sumatera masih sebatas SPALD-S individu dan SPALD-S komunal untuk mencapai target SDGs sanitasi layak 100% di tahun 2030. Namun, diselaraskan dengan program pemerintah dalam RPJMN 2020-2024 terhadap daerah prioritas untuk pembangunan SPALD-T, sehingga komposisi capaian 100% akses sanitasi layak tahun 2030 adalah dengan SPALD-S individu sebesar 69,07%, SPALD-S komunal 16,56%, dan SPALD-T sebesar 14,37% berdasarkan total jumlah pengguna setiap jenis SPALD nya.
7	Arga Pribadi Imawan	Universitas Gadjah Mada		INTRODUCTION The climate crisis has affected urban lives. It can be seen from sea level rises that have given an impact a tidal floods in coastal areas, especially in the part of North of Java. One of the cities in Indonesia, named Semarang, experiences tidal flooding every week. This process has implications for residents in accessing clean water, sanitation, land subsidence and more importantly in the women's health (re: reproduction). Thus, the project is called Water, Sanitation and Hygiene (WASH). WASH project is a collaborative research project between Research Center for Politics and Government (PolGov), Universitas Gadjah Mada (UGM), Indonesia and Monash University, Australia. The WASH project aims to understand the measure of local governments in utilising water and sanitation during the COVID-19 pandemic. In addition, this project examines to what extent women access gender-based roles, who are often seen as vulnerable groups, to access WASH in the COVID-19 pandemic situation. Therefore, this project took similar paradigm with WASH Sustainable Development Goals (SDGs) framework. As an institution that produces science, universities communicate with water stakeholders to encourage water policy, especially related to hygiene (Francis & Capri, 2021). This collaboration raises questions: how do members of the WASH project negotiate science and policy boundaries with water stakeholders in Semarang? How do members of the WASH project and water stakeholders in Semarang manage the common ground about water hygiene? Most of the studies tend to analyse the level of contested knowledge between scientific and indigenous knowledge (IK) (Lejano & Ingram, 2009; Maclean & Inc, 2015) or to find boundary objects in science and policy interaction (Star & Grisemer, 1989; Goksu, 2014). On different scales of analysis, several studies tend to focus on the role of organisation which acts as an intermediary agency to solve the boundaries between science and policy (Guston, 2001; Miller, 2001; Guston, 1999). This study analyses a different context by looking up the construction of interaction between science and policy in the water project, especially the WASH project. We proposed a different perception if communication between them is

				socially constructed, not taken for granted. We use the concept of boundary work from Halffman (2003) which explains that boundaries are 'created' and 'interacted' through three mediums, namely, text, object and person (well-known as TOP Model). By using this framework, we argue the absence of a boundary person leads to the failure of interaction between science and policy in the WASH project. METHODS We took a case study from the WASH research project in a coastal area by using qualitative research with a historiography approach. The research project was conducted from September to December 2020. The primary data is based on documents, namely call for paper "The Impact of Covid-19 on Indonesia's Economy and Society" with a sub-focus on health; meeting notes from September 2020 to November 2020; research proposal entitled "The Impact of Covid-19 on Women's Access to Water, Sanitation, and Hygiene in an Indonesian Fishing Village"; document research agreements from Australia Indonesia Centre (AIC) and Department of Foreign Affairs and Trade Australia; grant letter acceptance, transcripts phone interview with twenty-five women residents in Tambak Lorok (one region in the north of Semarang) and nine stakeholders, two times of focus groups discussion with stakeholders and research instruments. RESULTS We argue that the relationship between science and policy in the WASH project has unconsciously formed a 'boundary' between them. In terms of knowledge, science and policy have not interacted with each other because of the absence of a boundary person who operates in two different worlds. Therefore, the collaboration was not completely successful and gave impact to failure to manage a common ground of knowledge about water hygiene between UGM, Monash University and water stakeholders at the Covid-19 pandemic. Halffman (2003) argues if the one medium in the TOP model is missing, thus it gives an impact on the failure of the interaction of science and policy (Halffman, 2003; Halffman & Hoppe, 2005). Halffman (2003) divides boundary work into three mediums that could 'form' boundaries but also bridge their interactions. In the first medium, the type of text is characterised by rhetoric, language and literary tools (Halffman, 2003, p.60). Furthermore, it refers to the social nature (habits, social networks), language (protocols, concepts), or even material objects (measurement networks, testing equipment, buildings) (Hoppe & Halffman, 2005). Our findings show that "Small Rapid Research Grants' document from The Partnerships for Australia-Indonesia Research (PAIR) dan The Australia-Indonesia Center (AIC) contribute to the establishment of science and policy boundaries. The document contains a specific requirement, for instance, a list of universities and sub-topics. In the second medium, the object becomes a material boundary device that is used to be a landmark of the boundary (Halffman, 2003, p. 60). This idea explains objects that are understood differently between both actors so that it has implications for differences in activities between them, but they still refer to these objects as the basis of their activities. We find research reports become the boundary object. The research reports separate practices between scientific and policy activities. The person as the last medium describes the agency that stands between the two social worlds, which can play a role and move by being a representative of the relationship between science and policy (Halffman, 2003, p.61). These positions are identified differently as gatekeepers or knowledge brokers. In this WASH project, the role of the boundary person is missing which has been proven by demarcation from small rapid research grants from PAIR-AIC.

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8	Marita Ahdiyana	Universitas Negeri Yogyakrta	Pro-poor Policy in Community-Based Drinking Water and Sanitation Program in Gunungkidul Regency	The Community-Based Water Supply and Sanitation Provision Program is aimed at increasing access of rural communities to clean water and proper sanitation. Gunungkidul Regency is one of the regencies in the Special Region of Yogyakarta that is most prone to drought. This can affect food security and can even increase poverty. This drinking water supply program is one of the programs developed using a pro-poor approach. Policies with a pro-poor approach are considered quite effective by the government because they emphasize the involvement of the poor as a policy target. The governance process for designing and implementing policy must underpin every aspect of how the state and its institution's function. However, governance processes often fail to deliver results, especially for the poor. This study aims to gain a comprehensive understanding of pro-poor policies in the Community-Based Water and Sanitation Program in Gunungkidul Regency and the factors that hinder them. This study uses a qualitative descriptive research method. This research was conducted for 6 months, from March 2022 to August 2022. Data was obtained through in-depth interviews with purposively determined informants, namely parties related to understanding and involvement in the program. Researchers conducted in-depth interviews with informants involved in the program, including resource persons from the Public Works, Public Housing and Residential Area Offices, District Project Management Units, Partnership Committees, Program Implementation Units, Community Self-Help Groups, Water Supply and Sanitation System Management Groups, and program beneficiary communities. In addition, researchers also collected data through observation and literature search to collect documents relevant to this study. Qualitative data analysis in this study was carried out interactively and continuously until completion. The data obtained were analyzed using data analysis techniques consisting of activity flow including data reduction, data display, conclusion drawing, and verification. The results of the research show that the Community-Based Water and Sanitation Program in Gunungkidul has not demonstrated the embodiment of pro-poor policies. This is because the program's targeting has not

				specifically targeted the poor. Theimplementation of the program targets all elements of society regardless of rich or poor. In practice,the poor also often experience limited ability to pay for network connection fees. This causes them to prefer to use bucket wells with the risk of water shortages during the dry season. However, theprogram has been able to increase people's access to clean water at an affordable cost. Various stakeholders have also demonstrated their roles and participation in program implementation. However, there are still some obstacles, such as the poor quality of water sources during the rainy season and limitations in program management. Program management is often constrained by geographical factors, electricity, the capabilities of the poor, and uneven program development. To ensure the sustainability of the program, the village government and the community have formed Community Self-Help Groups and Implementation Units as program implementing units. However, in carrying out coordination and communication between various relevant stakeholders and the community is still lacking. This causes the program has not been implemented optimally.
9	Wildan Syahamata Ady, S.H., M.H.Li.	Universitas Islam Indonesia	WATER SANITATION AND HYGIENE RELATED BEHAVIOR CHANGE INTERVENTION ON SUSTAINABLE COMMUNITY DEVELOPMENT IN INDONESIA	Kualitas air yang buruk tidak terlepas dari kondisi sosial ekonomi. Sebuah survei air minum 2017 di Yogyakarta, sebuah pusat kota yang makmur di Jawa, menemukan bahwa 89 persen sumber air dan 67 persen air minum rumah tangga terkontaminasi oleh bakteri tinja. orang-orang Indonesia yang paling miskin masih tertinggal dengan kesenjangan yang signifikan dalam memperoleh akses sanitasi terutama di antara rumah tangga pada dua tingkat masyarakat paling rendah – sebesar 40 dan 65 persen di daerah perkotaan dan 36 dan 65 persen di daerah pedesaan. UNICEF mendukung Pemerintah Indonesia untuk mempercepat akses ke pasokan air, sanitasi, dan kebersihan yang dikelola dengan aman. Di tingkat nasional, upaya ini difokuskan dengan melakukan advokasi tingkat tinggi dan kemauan politik bersama dengan menyelaraskan kebijakan dan program WASH dengan realitas dasar dan memastikan bahwa kebijakan didasarkan pada informasi dan data yang andal dan terkini. Sanitasi yang dikelola dengan aman diakui sebagai prioritas utama dalam meningkatkan kesehatan, gizi, dan produktivitas masyarakat, dan merupakan target eksplisit Tujuan Pembangunan Berkelanjutan (SDG) keenam. Oleh karena itu, mencapai SDG 6 memerlukan strategi yang lebih dekat untuk menjangkau anak-anak dan keluarga Indonesia yang paling miskin dengan menyediakan akses yang lebih mudah untuk memperoleh pasokan air, sanitasi dan kebersihan (WASH) yang dikelola dengan aman. Isu kebersihan terhadap air, sanitasi dan kebersihan masih sangat penting untuk dibahas. Setiap orang memerlukan adanya air yang bersih untuk memenuhi kehidupan sehari-hari. Faktanya 70% bagian tubuh manusia merupakan air, jadi air bersih sangat diperlukan oleh setiap orang. Perumusan masalah dari penelitian ini yaitu pertama, bagaimana kebijakan hukuman terkait WASH di Indonesia? Kedua, bagaimana peran intervensi perubahan perilaku terkait WASH di Indonesia? Ketiga, bagaimana perubahan perilaku terkait WASH berdampak pada pembangunan masyarakat secara berkelanjutan? Penelitian ini dilakukan dengan metode penelitian normatif-yuridis (applied law research by regulation). Hasil penelitian ini menunjukkan bahwa kebijakan hukuman terkait WASH di Indonesia. Peran intervensi perubahan perilaku terkait WASH di Indonesia. Perubahan perilaku terkait WASH berdampak pada pembangunan masyarakat secara berkelanjutan.
10	Nico Halomoan	Institut Teknologi Bandung		Manado City is the capital of North Sulawesi Province, the largest urban area in eastern Indonesia. In 2019 in Manado City, households with access to proper drinking water sources were 13.81%, the population with access to safe and sustainable drinking water sources was 34.93%, and households with access to proper sanitation services were 88.72%. This condition includes the slum area in Manado City, which consists of 25 locations in 9 districts with a total area of 157.33 hectares. Pontianak City is the capital of West Kalimantan Province which has slum settlements of

				150.16 hectares spread over several sub-districts, many of which are due to inadequate basic facilities and infrastructure, lack of quality infrastructure, and lack of public understanding of the importance of a healthy and quality environment. In addition to the lack of demand for clean water, the community is also faced with the problem of polluted water quality due to the need for clean water services, which is only 27%, and wastewater management services that are technically appropriate are only 10%. The target of access to drinking water (clean water) and sanitation has not been achieved is a challenge for the government to achieve the target of 90% access to proper water and sanitation, including 15% safe access according to the target of the National Medium Term Development Plan, including in slums in the city of Manado and Pontianak. Handling sanitation problems in slum areas cannot be carried out without the support of various parties. One of the parties is a stakeholder who makes and manages policies and funding for investment and operations. Priorities in handling sanitation will show how big the opportunities are for alleviating slums and the distribution of solutions to sanitation problems in slums. The AHP method is used to determine priorities for sanitation and clean water management in slums according to stakeholders. Prioritization is needed to determine the importance and contribution level of each aspect used as a criterion for its parameters, which is carried out using a weighting method. Aspects determine the level of risk, availability of sanitation facilities and behaviour related to hygiene and sanitation. A weighting method is needed to determine the priority of these criteria. The type of questionnaire used for prioritization is a pairwise comparison questionnaire. The questionnaire is expected to produce priority assessments for increasing access to clean water and sanitation. AHP analysis was carried out on four criteria, nine sub-criteria, and questionnaires were given to thirteen stakeholder respondents in Manado City and ten in Pontianak City. Based on the results of the AHP test in Manado City and Pontianak City, it was found that based on the stakeholder perspective, drinking water supply is an aspect that is a top priority to be addressed compared to solid waste management, domestic wastewater management and environmental drainage. In contrast, domestic wastewater management is the last priority aspect. This priority needs to be discussed and reviewed to see and compare the condition of slum areas which are not in line with the potential risk of sanitation in wastewater management that is still unsafe in the two cities so that the policies taken will solve sanitation problems in slums.
11	Silvia Landa	University of North Carolina at Chapel Hill	Policy Strategy Context of Human Right Discourse as a Tool to Accelerate Water and Sanitation Access in Indonesia	Introduction The UN 2023 Water Conference will be an important event for all the member states to review their progress and devise strategies for reaching the target of Sustainable Development Goal 6 (SDG 6): ensure access to water and sanitation for all. Reaching SDG 6 is moving countries closer to delivering the enjoyment of the Human Right to Water and Sanitation (HRtWS) to their citizens. One approach to reaching HRtWS is Human Right Based Approach (HRBA). The main principles of HRBA to HRtWS are non-discrimination and equality, access to information and transparency, participation, accountability, and sustainability (de Albuquerque, 2014). However, there is still debates on the utilization of human right discourse for development, including in the water and sanitation sector. Thus, it is important to understand the existing literature about HRtWS and HRBA implementation in Water and Sanitation (W&S) sector. In this paper, when discussing HRtWS and HRBA, we will use human right discourse. When talking about a target, we will use HRtWS or human rights. When discussing the approach, we will use HRBA. When discussing both HRtWS and HRBA, we will use human right discourse. To guide our thinking, we will also provide relevant human rights literature outside of the water and sanitation sector.

				With so many human rights, Hickey & Mitlin, 2009 and Posner, 2014 argued that the human right discourse does not explain how government should make detailed planning in establishing specific strategic priorities. Moreover, Anand, 2007 suggested that mechanisms of governance may be more significant in improving access to water than water right legitimation. Thus, it is suggested that human right discourse should be implemented along aside other development framework (Broberg & Sano, 2017; Gready, 2008). Within the W&S sector, system strengthening is a commonly utilized framework. From existing literature, the most discussed component of system strengthening components related to human right discourse is policy strategy, monitoring and evaluation, and private financing. Based on literature review, we argue that there are three key connections between human right discourse and W&S system strengthening. First, human right discourse increases awareness of water and sanitation issues and put greater support for vulnerable and marginalized groups. Second, having HRtWS is not enough, we need HRBA to support the attempt to achieve it. HRBA principles such as accountability and participatory can help increase real action from the government and a more meaningful local interpretation of HRtWS. WaterAid's experience in four developing countries showed that HRBA contributed to constructive engagement between the government and rightsholders (Gosling et al., 2022). Thus, participatory and accountability components from HRBA principles can strengthen the water and sanitation system to support the achievement of HRtWS. Third, we need to be cautious about private financing by having economic and social context analysis to ensure the human right discourse in the management and sanitation process will the accelerate effort to the achievement of HRtWS. Because taking action based on consideration of the local context has been advised as the best strategy in implementing HRBA to achieve HRtWS (Angel & Loftus, 2019; Brinks et al., 2022), this paper will focus on Indonesian context. Many studies have explored human right discourse in the W&S sector from a policy perspective (Wahi, 2022). (Agnew, 2011; Masiangoako et al., 2022; Singh, 2022; Wahi, 2022). However, there is still no study focusing to understand more about the actors behind government policy and strategy. Thus, by focusing on the Indonesian policy and strategy context, this paper will study about knowledge, perception, and practice (KAP) of government officials related to human right discourse in the W&S sector. We will also explore more about their opinion on the support for human right discourse as W&S acceleration tool especially related to support for disadvantages groups, participation and accountability, and private financing. Method To provide the existing context of Indonesian policy and strategy related to human right discourse in the W&S sector, this study will analyze government regulations, strategy documents, and progress. Indonesia Central Bureau of Statistics data will be used to analyze the progress. A survey for WASH decision makers will be done using convenient sampling from Yayasan Plan International Indonesia (YPII) W&S project areas in Nusa Tenggara Timur and Nusa Tenggara Barat Provinces. Sample are decision-makers from the W&S working group such as the head of public work, planning, environmental, village development, and health agencies. KAP framework used in this study is often used by researchers in the field of health policy and management (Arsenault-Lapierre et al., 2021; Lee et al., 2022; McKinnon et al., 2019; Thirunavukkarasu et al., 2022; Xie et al., 2022). For the study, we will use an operational definition based on the WHO's KAP study framework (WHO, 2008). Knowledge refers to the interviewees' awareness and understanding (what is known) of the study phenomenon, in this case, the HRtWS as the target and HRBA as an approach. Attitude refers to the interviewees' perceptions of HRtWS as a target and

				HRBA implementation concerning system strengthening components, especially for policy strategy, monitoring and evaluation, and financing, including any preconceived ideas (thoughts or feelings) that they may have towards it. Practices refer to the ways (what is done) in which interviewees demonstrate and apply their knowledge and attitude towards human right discourse in the W&S sector through their actions or behaviors. Expected result and limitation Within its limitation to Indonesian policy strategy context, focusing only on water and sanitation sector with convenient sampling to government actors in YPII's project areas, this study aims to provide a better understanding of the possibility of human right discourse as a tool to accelerate water and sanitation access in policy and strategy context of Indonesia. Not only providing general policy and strategy information, this paper will also provide new insight into government actors' KAP related to human right discourse in the W&S sector in Indonesia.
12	Prathiwi Widyatmi Putri	University of Kassel	Is the "Privatization" Really Over? Towards a Just Regulatory Framework for Jakarta's Water Services Post-Concession	The Indonesian Supreme Court ruled in 2017 that Jakarta's water concession must cease because it violates some national and local regulations. As reactions, many (human right) activists and anti-privatization groups were jubilant that the 25-year private-concession would finally come to an end and that the Jakarta's water supply services would return to the public hand. The Governor of Jakarta Province at that time, Anies Baswedan, vowed that he would immediately enforce the Supreme Court's decision. The Governor formed a team to assist him with the re-municipalization of Jakarta's water services and improving its governance framework. What follows, unfortunately, is a lot more complicated. In 2019, through a review made by the Ministry of Finance, the Supreme Court annulled its 2017 Decision. As a result, the concession remains untouched – the contract can only lapse in 2023 unless otherwise agreed by the parties. In principle, there is an urgent need to increase the coverage of water service provision within the capital city – and this was part of the political promise of the 2017 elected Governor. The only possible immediate legal step to be taken by the Government was retaking Jakarta's water services through private sub-contracting. Following tough negotiations, the concession holders have different positions. Aetra, the private operator in charge of the Eastern half of Jakarta, agreed to relinquish the distribution part of the network it controls but retain parts of the bulk water supply; this negotiation has been formalized by extending the existing concession contract with adjustment. On the contrary, Palyja, who controls the Western half refused to adjust and opted for the contract to lapse in 2023. For the citizens of Jakarta, 2023 is the year of an inflection point in the water sector. There is need to encourage public debates and find new regulatory models. Although the national legal framework restricts the involvement of private sector within basic-needs provision systems, and in the case of water sector by prohibiting them to manage the distribution networks, there are varying structural and institutional dynamics at the more local scales that have made diverse forms and degrees of involvement of private actors in place. In this paper, we argue that the national regulatory framework is ineffective in securing the public provision system; it hinders access to water for all, but allowing diverse private actors operating within the under- regulated public domains. In the current governance practice, private sector players utilize "blended financing" schemes to go around the regulatory restrictions but with an end-result of they manage to maintain contractual controls of all the provision chains. We view that it is crucial to differentiate between service provision and service production; it is the basic service provision that the state has to guarantee instead of a particular model of service production. In other words, the state needs to encourage socially-and-ecologically just service production systems to meet basic needs of all citizens, in diverse possible models of service production scheme. We argue that in addition to the national legal framework, Jakarta should ensure good governance and public

				control by reforming its local by-laws on water services. Failure to ensure a just regulatory system in Jakarta would mean that the commercialization of water could continue in different ways.
13	Nishrin Azzely Qowamuna	Center for Regulation, Policy, and Governance	Mutual Accountability and Multistakeholder Partnerships in Water and Sanitation Sector in Indonesia	In line with the Sustainable Development Goal (SDG) 6, the government of Indonesia has set a target to ensure 100% access to improved drinking water, including 15% of safely managed drinking water, and 90% access to improved sanitation facilities, including 15% safely managed sanitation by 2024. Over the past decade, Indonesia has made consistent progress in increasing the coverage of improved drinking water and sanitation. Despite progress, Indonesia continues to face challenges in providing safely managed drinking water and sanitation services to its population. As of 2020, only 11,95% households have access to safely managed drinking water, while 7,6% have access to safely managed sanitation. To ensure the achievement of water and sanitation targets, collaborative efforts from a wide range of actors, including government agencies, civil society, development partners, private sector, research and learning institutions are needed to enhance national processes and capabilities. It is also important that actors are able to hold each other accountable for the SDG 6 progress. Mutual accountability is seen as a driving force in fostering collaboration towards a common goal. This paper aims to explore mutual accountability and multi-stakeholder engagement in the water and sanitation sector in Indonesia. It identifies the mechanisms in place to support mutual accountability as well as enabling factors that are required for collaborative actions between sector actors. This paper draws on the Indonesia case study as part of the Sanitation and Water for All (SWA) Mutual Accountability Mechanism (MAM) study conducted in 2020 and the SWA MAM Catalytic support conducted in 2022. The data collection includes document review, online survey, key informant interviews, social network analysis (SNA), validation workshop, group discussion, and online seminars. In the context of SWA, mutual accountability refers to the mechanism by which partners collaborate to work together to build robust, transparent, and responsive accountability systems, and willingly be held responsible for the commitments made to one another. The paper identifies different forms of accountability in the national level, such as public accountability and upward accountability. Various forms of multi-stakeholder platforms are also found in the national level. Two platforms with the largest membership and substantial government engagement are Jejaring AMPL (Water and sanitation network) and National Pokja AMPL (PPAS/PKP). Jejaring AMPL has a diverse membership, including government actors, NGOs, donor organizations, and research and learning organization in their personal capacity. National Pokja AMPL (PPAS/PKP) officially consists of government actors, although non-government actors are sometimes invited for discussions. The two main platforms typically serve as communication and coordination platform but have yet to enable mutual accountability. This paper also assessed thee enabling factors that are required to support sector effective collaboration and accountability are assessed in this paper. Trust, agenda-setting, and shared vision are seen as the driving force for stakeholders to take part in a multi-stakeholder engagement. However, power difference is considered by some as one of the challenges in collaboration between government agencies and CSOs as well as between CSOs themselves. It is therefore important to enhance participation and inclusiveness between sector actors by strengthening the multi-stakeholder platform(s) and to enable mutual accountability within the platform as well as opportunity for learning. In the context of Indonesia, further discussion is necessary in terms of the rules of engagement and the level or proceduralization that the actors are willing to adhere. The paper also found that the SWA,

				a global multi-stakeholder partnership, that works towards collective action in the sector, is seen as neutral ground that can level the playing field between large and small stakeholders.
14	Cindy Rianti Priadi	Universitas Indonesia		By 2050, it is estimated that more than 300 million people in the world will be exposed to repeated flooding because of sea level rise and climate change. Indonesia, located in the Pacific ring of fire, is very vulnerable to the impacts of climate change, which can be observed through high sea level rise and increasing frequency of floods, droughts, and strong winds. Climate models suggest that the frequency and intensity of these climate hazards will increase, and approximately 40 million people living in Indonesia's low-lying coastal areas are at risk of sea level rise. Population growth and urbanization will increase this risk, with the poor and other vulnerable groups will be affected the most. Water, Sanitation and Hygiene (WASH) services are one of the aspects that affected by climate hazards, with detrimental consequences for other essential services including public health. Understanding the main threats posed by sea level rise to sanitation services in coastal areas is very important to be able to develop the adaptation measures. This is in line with the Indonesian RPJMN 2020-2024, where the Indonesian government targets 90% access to proper sanitation, including 15% access to safe sanitation. This research aims to develop of a Sanitation Adaptation for Sea Level Rise framework and pilot the implementation of this framework in 2 cities. Banjarmasin and Mataram was chosen due to their low-lying condition, their vulnerability to sea level rise and their existing and future sanitation system. The implementation was mainly divided into 3 parts: 1. Pre-workshop to understand problem context and the institutional landscape. During this phase, data related with climate change, sanitation infrastructure, demographics, and health from regional agencies was collected and analyzed. 2. Workshop on Climate Impact Analysis and Sanitation Hazard Assessment Framework. 3. Dissemination During the 3-day workshop, each local government actively participated in the implementation of this framework together with the relevant regional agencies. The workshop consisted of: a. Analysis of existing climate and sanitation impact b. Identification of hot spots c. Analysis of cascading impacts d. Sharing of adaptation experiences e. Identification of adaptation options and action plans Around 10-12 city and provincial governments agencies attended the workshop with around 30 participants. The participants took part and lead several activities including analyzing shit flow diagram, overlaying different risk factor maps, identified causal diagrams and designed action plans. At the end of the workshops, most groups agreed to propose succinct action plans. City leaders of this sector was also present and provided feedback to the action plans proposed. For example, action plan proposes in Banjarmasin, included: a. Technical aspect: Participants acknowledge the limited technology available for flooded area and planned to develop more robust resilient sanitation technology b. Social aspect: Participants planned for more vast socialization of appropriate technology and maintenance, including regular desludging

				c. Institutional and financial aspects: Government needs to have flexible but accountable funding for disaster response but also disaster risk reduction. Generally, the Workshop received good responses from the participants. Participants gained new knowledge related to sanitation and climate change issues. Participants also understood the lecture presented by the Workshop Team.
15	Dr. R. Ismala Dewi, S.H., M.H.	Fakultas Hukum Universitas Indonesia	TANGGUNG JAWAB PENGELOLAAN SUNGAI UNTUK PEMENUHAN KEBUTUHAN AIR MASYARAKAT OLEH PERUSAHAAN DAERAH AIR MINUM (Tinjauan Hukum Pemanfaatan Sungai oleh Perusahaan Daerah Air Minum di Provinsi Banten)	Air merupakan sumber daya alam yang mendasar bagi kehidupan manusia, sehingga pemenuhannya perlu mendapat perhatian khusus, terutama untuk air minum yang layak konsumsi. Namun demikian, seiring dengan pertambahan jumlah penduduk, pemenuhan kebutuhan air tersebut belum dapat dilaksanakan sepenuhnya sesuai dengan target pencapaian. Hal ini sebagaimana yang terjadi di provinsi Banten, walaupun tiap kabupaten dan kotanya mempunyai Perusahaan Daerah Air Minum (PDAM) sendiri. Dalam praktiknya sumber daya air dari sungai tidak sepenuhnya sesuai dengan standar baku mutu air. Oleh karena itu, sungai yang merupakan sumber air permukakan untuk bahan baku air bagi PDAM perlu dikelola dengan berwawasan lingkungan agar kualitas dan keberlanjutan keberadaannya dapat terjaga. Untuk itu diperlukan dasar pengaturan pemanfaatan sungai dan mengimplementasikannya. Berdasarkan latar belakang permasalahan tersebut perlu dikaji mengenai; pengaturan terkait dengan pemanfaatan sungai untuk kebutuhan air masyarakat oleh PDAM; dan siapa yang bertanggung jawab dalam pengelolaan sungai agar kualitas air baku maupun keberadaan air sungai tetap terjaga. Untuk menjawab permasalahan tersebut akan dikaji berbagai peraturan tentang air, sungai, dan dokumen terkait lainnya, serta informasi dari nara sumber melalui wawancara. Hasil kajian menunjukan pengaturan tentang sungai atau air permukaan belum memadai, yaitu peraturan di tingkat nasional maupun peraturan daerah provinsi Banten dan peraturan Daerah Kabupaten/ Kota-nya. Belum memadainya dilihat dari sisi substansi maupun kelengkapan peraturan yang menjadi dasar pelaksanaan pengelolaan dan pemanfaatan sungai. Tanggung jawab pengelolaan sungai di dalam praktik belum jelas dan tidak terkoordinasi dengan baik antar para pemangku kepentingan. Apabila kondisi air sungai buruk maka jika dipakai sebagai bahan baku air oleh PDAM akan berdampak pada biaya pengolahan air untuk menjadi air layak konsumsi semakin mahal. Akibatnya akan berdampak pada harga air minum masyarakat yang akan naik pula. Pada akhirnya akan berdampak pada kesejahteraan masyarakat yang menurun.
16	Tadzkia Nurshafira	Tadzkia Nurshafira		Partisipasi Sektor Privat (PSP) menjadi salah satu karakter yang mendominasi pengelolaan sumber daya air bersih di Indonesia pasca reformasi. Keterlibatan ini diiringi dengan berbagai respons, termasuk perdebatan, dukungan, dan kritik, yang menghadapkan air sebagai barang ekonomi dengan air sebagai barang publik. PSP dalam tata kelola air bersih secara luas dapat didefinisikan sebagai keterlibatan atau intervensi sektor privat dalam tata kelola pendistribusian air bersih pada masyarakat, baik dalam skema privatisasi penuh maupun kemitraan antara sektor publik dan privat atau yang lebih dikenal dengan terminologi public-private partnership. Bagi sudut pandang ini, sektor privat tidak harus dihilangkan sepenuhnya: ia harus diatur dan bekerja berdampingan dengan institusi publik. Meski demikian, PSP memiliki wajah dan derajat yang berbeda-beda dalam sejarah ekonomi-politik Indonesia. Perbedaan konteks di tiap rezim ekonomi-politik menciptakan struktur dan diskursus yang memengaruhi bagaimana yang-privat dipahami dan seberapa besar ia dapat terlibat dalam pengelolaan air di Indonesia. Analisis terhadap privatisasi tidak dapat lagi dibatasi pada aktor swasta berskala besar yang mendapatkan konsesi dari pemerintah, namun harus menyentuh berbagai wujud mekanisme pasar yang bekerja di dalam cara aktor—pemerintah, sektor swasta, dan komunitas—menyediakan dan memenuhi akses terhadap air bersih.

				Dengan latar belakang tersebut, tulisan ini berupaya untuk memahami genealogi keterlibatan sektor privat dalam tata kelola air bersih di Indonesia. Tulisan ini ingin melihat perubahan konfigurasi struktur dan diskursus ekonomi-politik yang memengaruhi wajah dari PSP di Indonesia dan dampak yang muncul terhadap upaya pemenuhan 100% akses air bersih yang berkualitas, berkelanjutan, dan terjangkau. Dengan menggunakan pendekatan Cultural Political Economy dari Jessop dan Sum (2013), tulisan ini akan melihat PSP sebagai produk yang dihasilkan dari kontestasi politik antara elemen yang terlibat dan tidak stabil—selalu berubah dalam konteks spasial dan temporal yang berbeda. Pemetaan dan pelacakan sejarah beroperasinya PSP dapat memberikan analisis terhadap prakondisi yang memungkinkan dan menghambat suatu wacana terkait air dan praktik PSP menjadi dominan atau terpinggirkan, beserta wacana tandingan yang berusaha menyeimbanginya.

CLUSTER 2: WATER UTILITY MANAGEMENT / MANAJEMEN UTILITAS AIR, COORDINATOR / KOORDINATOR : PROF. DR. IGNASIUS DWI ATMANA SUTAPA, MSC.,				
NO	**NAME /NAMA**	**UNIVERSITY / INSTITUTION UNIVERSITAS / LEMBAGA**	**TITLE / JUDUL**	**ABSTRACT / ABSTRAK**
1	Arif Susanto	PT Freeport Indonesia	Assessment of Raw Water Quality Status for Drinking Water in the PTFI Concentrating Division Area	The quality of the drinking water is determined by the raw water obtained from surface run-off, which must fulfill the requirements set by the Indonesian Government. Therefore, this study aims to analyze the quality of the raw water used as a source of drinking water. It was carried out using the Pollution Index (PI) as well as Storage and Retrieval (STORET) methods. The results of both methods, namely the PI and STORET have a score of 0.612 and 0, respectively. The samples tested fulfilled the water quality standard because all physical, chemical, and microbiological parameters have values below the threshold. The raw water based on the STORET method is classified in category A, and to maintain this quality, the water must not be polluted or contaminated. Laboratory testing and routine daily inspections also need to be conducted on the content of the water quality parameters. Meanwhile, when the test results exceed the standard due to the presence of contamination in the raw water, corrective action is required.
2	Wathri Fitrada, S.Si., M.T.	Sekolah Tinggi Teknologi Industri Padang		Desinfeksi merupakan salah satu tahapan proses pengolahan air yang bertujuan untuk membunuh mikroorganisme dalam air. Konsentrasi klor di sepanjang jaringan distribusi harus memenuhi baku mutu air minum Permenkes no. 492/MENKES/IV/2010 tentang Persyaratan Kualitas Air Minum yaitu 0,2-0,5 mg/L. Air pada jaringan distribusi dapat mengalami kontaminasi diakibatkan kebocoran pipa. Hal tersebut merupakan celah mikroorganisme masuk ke dalam jaringan pipa distribusi. Penelitian ini bertujuan untuk mengetahui kualitas air dalam jaringan distribusi dan menganalisis penurunan klor dalam pipa jaringan distribusi. Parameter kualitas air yang diukur yaitu pH, suhu, kekeruhan, residu klor, bakteri koliform, dan E. coli. Sampel air diambil pada reservoir, titik terdekat dengan reservoir, titik median jaringan distribusi, dan titik terjauh jaringan distribusi. Penurunan konsentrasi klor dianalisis menggunakan Epanet. Dari penelitian didapatkan bahwa telah ditemukan kondisi air positif tercemar bakteri koliform pada jarak 0,5 km dari reservoar dan meningkat sepanjang aliran pipa. Pada jarak yang sama klor mengalami penurunan dengan penambahan jaraknya dari reservoir, hal tersebut disebabkan oleh terjadinya penurunan nilai elevasi sepanjang jalur distribusi dan dinding pipa. Sepanjang jalur distribusi terjadi peningkatan suhu hingga pada titik terjauh distribusi

				melewati baku mutu yang berlaku. Peningkatan bakteri koliform pada jaringan distribusi air minum berkaitan dengan penurunan konsentrasi klor dengan nilai determinan koefisien 0,965.
3	D. Daniel, Trimo Pamudji Al Djono	Universitas Gadjah Mada		To tackle the problem of water access in peri-urban and rural areas, the Indonesian government launched the community-based rural water supply and sanitation program, called "Program Penyediaan Air Minum dan Sanitasi Berbasis Masyarakat (PAMSIMAS)" in Bahasa, in 2006. There have been three periods of the PAMSIMAS program until now: PAMSIMAS I (2008–2012), PAMSIMAS II (2013–2015), and PAMSIMAS III (2016–2021). PAMSIMAS has benefited about 21.6 million people in 32 thousand villages throughout Indonesia until May 2021. This makes PAMSIMAS one of the biggest water and sanitation access programs in the world. The latest data in May 2021 indicates that 85.4% of the water supply systems were fully functioning, 9.1% were partially functioning, and 5.5% were not functioning. We conducted analyses using multiple methods, i.e., multinomial logistic regression, Bayesian belief network (BBN) model, and system dynamic (SD) model, and using almost 29,000 PAMSIMAS villages data in the country and also a study case from Magelang Regency, Province of Central Java, to gain insights on the factors related to the sustainability or functionality of PAMSIMAS project in Indonesia. The regression analysis shows that good management of the water board ("KPSPAMS" in Bahasa), e.g., the existence of a list of PAMSIMAS assets, bookkeeping, and work plan, is positively associated with the functionality. Furthermore, a high investment per capita in the PAMSIMAS project is negatively associated with the functionality, suggesting the need for comprehensive economic analysis in the feasibility study in scattered housing sites and remote-undeveloped areas. Moreover, the household connection is more likely to be functioning than the communal connection. In general, there are two types of community contributions on the project: (1) in-kind, i.e., related to physical contribution in various activities, and (2) in-cash, i.e., cash contribution. If we only analyze factors related to the community contribution, the regression analysis shows that the effect of monthly or regular in-cash or financial contributions on the functionality is significantly larger than all variables related to the in-kind contributions at the beginning of the project, e.g., planning or pipe system construction. This finding is supported by the BBN analysis: if the beneficiaries do not pay for water, the probability of not functioning systems is 20 times higher than systems with fee collection. Using the study case of Magelang Regency, the scenario analysis of the SD model shows that external fund is critical to support the program financially, especially at the beginning of the. Moreover, human factors, i.e., the performance of the water board and support from the community, positively influence the sustainability of the PAMSIMAS program. All those findings should be taken into account in the implementation of PAMSIMAS or other community-based rural water supply programs in Indonesia and developing countries to increase the chance of sustainability.
4	R. Hari Yuliandra	Universitas Andalas	FUZZY DELPHI METHOD (FDM) IN IDENTIFYING PROPERTIES AND INDICATORS OF DRINKING WATER SUPPLY SYSTEM RESILIENCE TO FLOOD: AN INTRODUCTION AND OVERVIEW	In Indonesia, Over the period from 2011 to 2020 is recorded there were 7574 flood disasters with moderate-high intensity events. Urban flood disasters can disrupt DWSS infrastructure services and cause significant disruption to its components. These disturbances are pipe breaks, service interruptions, power outages, and loss of public confidence. Certain flood events have a critical impact on water quality than even a short period of drought. Currently, academics and practitioners are starting to pay attention to the concept of resilience management to manage crises and minimize the effects of disasters.

				Measurement of DWSS resilience in Indonesia has its challenges. These challenges include: resilience being a new concept in DWSS disaster management in Indonesia, difficulties obtaining reliable quantitative data, the interdependence of several factors, and the need for a better understanding of the assessment variables. The qualitative approach allows for greater flexibility in applications ranging from catastrophic to highly uncertain, thanks to expert judgment. This paper provides an introduction and an overview of the Fuzzy Delphi Method (FDM) in identifying the properties and indicators of DWSS resilience to flooding. The FDM uses a fuzzy membership system response instead of a single-choice response system like the conventional Delphi methods approach. FDM allows the involved experts to express ambiguity in answering the survey questions. The proposed stage for determining the properties and indicators of DWSS resilience to flooding in this study consists of determining the hypothesis variables and the determination process of the instrument variables for DWSS resilience through FDM. Determination of the hypothesis variable consists of a literature review, assessment, and testing. The determination process of variables through FDM applies through a three-round Delphi survey. The results of the expert assessment (in the initial assessment process and the FDM process) apply to assessing the validity of the instrument content in future research.

CLUSTER 3: WASH SCIENCES AND TECHNOLOGY / ILMU WASH DAN TEKNOLOGI, COORDINATOR / KOORDINATOR : CINDY PRIADI				
NO	**NAME /NAMA**	**UNIVERSITY / INSTITUTION UNIVERSITAS / LEMBAGA**	**TITLE / JUDUL**	**ABSTRACT / ABSTRAK**
1	Fefi Eka Wardiani	Chung Yuan Christian University, Taiwan	The presence of mixed SMX and TMP in the water and sediments of a shrimp aquaculture area in Yunlin, Taiwan.	The expansion of aquaculture in recent years has led to an increase in the use of antibiotics to prevent or treat infectious illnesses. However, due to inadequate absorption efficiencies and excessive use, most antibiotics used in aquaculture have been discharged directly into aquaculture water or adjoining water, posing an ecological risk to aquatic creatures. Farmers combined antibiotics to create a medicated feed for shrimp and fish. The use of antimicrobials in feed can result in antibiotic residues in shrimp and fish products. In this study, we evaluated the environmental impacts of illumination, oxygen levels, and microbial activity on the fates of mixtures SMX-TMP (SMXmix; TMPmix) in sediment slurry and water. The findings provide insight into the fates of antibiotics in aquaculture ponds. In Yunlin County, southwest Taiwan, sediment and water samples were obtained from shrimp (Litopenaeus vannamei) ponds. In the SMXmix; TMPmix, the t1/2 in water was substantially slower. These findings revealed that SMXmix; TMPmix were more permanent in water than sediment slurry. Possibly due to the organic carbon content, pH, and octanol-water partitioning coefficient, the transformation in the water was more stable than in the sediment slurry (Kow). Therefore, it is important to apply caution when determining the SMX and TMP transformation rates in animal medication.
2	Elva Stiawan, S.Pd., M.Si.	Universitas Pertahanan RI	Marine Porous Biosilica as Prospective Renewable Biomaterial for Microbial Removal	Routine procurement of various consumables of supporting materials, such as membrane-based filters, separation matrix, flocculant, and etc., commonly contributes to high expense in some stages of drinking water purification activities. Origin of many supporting materials are considered from nonrenewable resources, either chemically synthesized or directly obtained from natural deposit, so that there would be possibilities of material shortage during

			Grade Filter in Drinking Water Processing	drinking water manufacturing that could disturb water resilience. Renewable sources of those materials are ought to thoroughly explored and properly developed, subsequently, in order to support supply chain aspect of supporting materials that are regularly consumed in water processing activities. Marine diatoms as cultivable microalga group can produce silica-based biomaterial with micrometer-sized of organized pores. Due to broad chemical stability and specific size of pores, natural marine biosilica from cultivable diatoms, could be prospectively utilized as main component of separation matrix for removing and/or reducing waters' particulates. Regarding bioburden reduction perspective, the inert-porous-biomaterial may display potential microbial-sieving properties based on their pore appearances of some marine diatom species taken by SEM imaging. Some studies displayed diatoms SEM results showed that the biosilica surface of some pennate and centric diatoms were visually appeared in ordered sizes around 0.2 µm. Technically, those diameter of micrometer-sized porous biosilica could provide prospective capturing capabilities for Brevundimonas diminuta (B. diminuta) ATCC 19146 as industrial standard for sterilizing grade filter. This review will describe some diatoms species that may have related capabilities according to their pore sizes and characteristic as well as consideration of their cell shaped. Through illustrative schematic diagram, visual modelling of particle or microbial capturing will be explained. Cultivability features of diatom implies that these marine resources bioprocessing could also support supply chain of consumables supporting material that are essential in water purification rather than utilization of diatomaceous earth that are categorized as nonrenewable natural deposit. As a suggestion, proper collection technique of diatom biosilica, optimization of upstream process of diatom biomass collection, consideration of economic aspects of choosing organic solvent and reagents being used in biosilica collection, as well as further chemical modification of biosilica functional groups should be steadily developed in order to provide fine grade of natural marine diatom biosilica with broader function for drinking water purification purposes.
3	Wisnu Prayogo	Universitas Negeri Medan	THE INVESTIGATION OF POLLUTANT REMOVAL BY MINERAL WOOL TO THE WATER RIVER QUALITY STATUS OF CIKAPAYANG RIVER, INDONESIA	On a laboratory scale, mineral wool has been used as a filter that could remove up to 95% of pollutants. However, to date, there was not single accessible study of the wide-scale use of mineral wool. As a river located in the central of Bandung City, Indonesia, the Cikapayang River has an important role in the ecosystem balance around the city. Therefore, this study aimed to evaluate the installation of mineral wool on the pollution index score in the Cikapayang River. This article is the first information about on-site proof of filter media in improving surface water quality in real conditions. In this case study, we use data monitoring from four stations flowing on Bandung City Hall's southwest side. Station I (6°54'37,5"S 107°36'37.8"E), Station II (6°54'39.2"S 107°36'37.7"E), Station III (6°54'41.3"S 107°36'37.5"E), and Station IV (6°54'43.8"S 107°36'37.3"E) were fitted with mineral wool with dimensions of 180x30x120 cm, 125x30x80 cm, 350x15x100 cm, and 325x15x100 cm respectively. In this case, WQI was calculated using Storage and Retrieval (STORET), Pollution Index (PI), and Canadian Council of Ministers of the Environment WQI (CCME WQI). STORET and PI have been developed by the Indonesian Republic Environmental Ministry and detailed in Decree No. 115 in 2003. Meanwhile, the CCME WQI is a method that various researchers highly recommend because it was considered more sensitive. Data monitoring for two hundred and one days were grouped and analyzed according to wet vs. dry month and monitoring stations. Samples were taken using grab sampling before and after passing through the mineral wool and then brought to the laboratory for analysis. In addition, COD, TDS, TSS, TP, NO 3- , and NO 2- parameters were analyzed based on the Standard Methods for the Examination of Water and Wastewater (SMEWW), except pH, temperature, and DO that use a portable meter. The analysis of two of the three methods, STORET and CCME WQI, showed that the current quality of the Cikapayang River could no longer support its

				designation as class II surface water. The analysis showed that they were heavily to badly polluted, even during the rainy season. In the dry season that started from April to August, the PI score increased around 0.25-0.64 and the index score in STORET decreased from 3-6, which indicating that the pollution was getting worse. In addition, the analysis using CCME WQI showed that the pollution increased by 0.30-0,48. Like the results of laboratory tests, mineral wool could reduce physicochemical parameters with varying efficiency depending on the parameters and days when tested on a field scale. The amount of wastewater that entered the water body and the water volume in the two seasons that different from each other. Thus, it was considered to be the limitation for the removal efficiency, which was not as good as when tested in the laboratory. After adding mineral wool to each segment, the average pollution status decreased. The average IP index score becomes 4.65, -68 STORET, and 26.42 CCME WQI. Based on the results of the investigation as well as the advantages and disadvantages of each technique, the CCME WQI was considered the best for determining the quality dynamics because the amount of data and the difference score size of each measured data against the quality standard are considerable. Overall, mineral wool could improve water quality, characterized by changes in the pollution index score ranging from 30-65%.
4	Muhammad Alfalah Fauzi	Endress+Hauser Indonesia	SEGMENTED AND SCALABLE ONLINE MONITORING APPROACH TO REDUCE THE RISK OF GREYWATER POLLUTION IN INDONESIA	With majority of Indonesian population still rely on on-site septic tank, there is a tendency that while the blackwater is mostly kept contained, the greywater is continuously discharged without prior treatment. The government has put some efforts as a response through development of DEWATS system as part of SANIMAS program whereas other ready-onsite “Sewage Treatment Plant” (STP) products are also available. However, recent studies mention that lack of monitoring and maintenance contribute as two of several drawbacks. In brief, this study aims to find out the importance of online monitoring and how it can contribute to help sustaining different scale of decentralized greywater treatment system by means of segmented and scalable approach. It is also expected that the proposed online monitoring approach can support existing government online monitoring program as well as to accelerate the adoption of government programs related with sanitation and clean river.
5	Suci Wulandari	Universitas Andalas		Malang City has succeeded in achieving open defecation-free (ODF) status through the Community-Based Total Sanitation (STBM) program which covers all urban villages so that around 100% of the population has healthy latrines and proper sanitation. On the other hand, the level of collection of sludge at the Sludge Treatment Plant (STP) through scheduled desludging services (SDS) by the government and the private sector is still low, around 11%. In order to encourage the implementation of SDS, the ultimate goal of sludge treatment needs to be redefined so that the processing product is more applicable and of high value so that it can become a resource recovery product. Currently, the use of sludge from STP is limited to organic fertilizer, while sewage sludge has the potential as a biofuel which has been applied in several countries, as a partial substitute for high-emission fuels such as coal for power plants and cement factories. This is one of the solutions related to carbon tax policies and efforts to reduce factory operating costs by using bio-solid fuel from sludge products with lower emissions. This study aims to measure the potential utilization of sludge as bio-solid fuel in the form of non-charcoal briquettes combined with sawdust biomass with variations of sewage sludge (SS) and sawdust (SD) 75%: 25%, 50%:50%, and 25%:75%. The research location is the sludge treatment plant (STP) Malang City. The raw material for sludge is taken from the STP sludge drying bed and made into non-charcoal briquettes on a labor scale. Fuel potential is carried out through analysis of heating value based on ASTM D 5865-01, proximate analysis based on SNI 06-3730-1995 and SNI 01-6235-2000, sulfur value based on ASTM D3177, and density of briquettes based on SNI 8021-2020. The quality

				standard used as a reference for fuel qualification is SNI 8021:2020, and the European standard CEN/TS 14961:2005 is an additional standard in the special qualification criteria for briquette density. The calorific value of fecal sludge non-charcoal briquettes was obtained 100% almost meeting the second fuel quality standard based on SNI 8021: 2020 of 3,921.43 cal/g. The addition of sawdust gave a trend of increasing the calorific value of fecal sludge non-charcoal briquettes up to 32%, namely 5,158.64 cal/g. This addition also increases the water content, where the lowest water content is owned by the 75% SS briquette: 25% SD, namely 3.26%. The characteristics of sludge with a high ash content greatly benefit from the combination of sawdust, so that the ash content of mixed briquettes experiences a decreasing trend of up to 40%. While the content of volatile and bound carbon does not have a linear trend towards the variation of briquettes, i.e. 48.68% - 68.97% and 11.44% - 26.62% respectively. The sulfur value meets the second quality standard of SNI 8021: 2020, which is in the range of 0.23% - 0.41%. Based on CEN/TS 14961:2005, all briquettes meet the density criteria above 0.5 g/cm3, namely 0.50 ± 0.09 - 0.88 ± 0.12 g/cm3, whereas according to SNI 8021:2020 only variety briquettes SS 75%:SD 25% only that meets the second quality criterion. From this study, it was found that sewage sludge in Malang City has the potential to be used as a bio-solid fuel and the use of sawdust as a combined biomass can increase several parameters of the required fuel criteria.
6	Carissa Eukairin Purnomo	Program Studi Teknik Lingkungan Universitas Indonesia	PEMBANGUNAN TOILET TAHAN BANJIR DI DESA PIJOT, LOMBOK TIMUR UNTUK MENDUKUNG SANITASI BERKETAHANAN IKLIM	Indonesia sebagai negara kepulauan sangat rentan terhadap dampak perubahan iklim yang berpotensi membahayakan masyarakat. Menurut Bappenas, sebanyak 42 juta orang yang tinggal di daerah pesisir dataran rendah memiliki risiko dari dampak kenaikan air laut yang mencapai 150-450 mm pada tahun 2050. Desa Pijot, Kabupaten Lombok Timur merupakan salah satu daerah pesisir yang terdampak banjir akibat rob, pasang laut, serta curah hujan tinggi. Kondisi ini menjadi suatu ancaman bagi sistem air dan sanitasi mulai dari toilet, tangki septik, hingga instalasi pengolahan air limbahnya. Hal tersebut disebabkan karena perubahan iklim belum dimasukkan sebagai salah satu komponen yang dipertimbangkan dalam perencanaan pembangunan fasilitas sanitasi dan adanya keterbatasan masyarakat akan informasi mengenai bahaya iklim yang mengancam serta dampaknya terhadap fasilitas sanitasi. Saat ini masyarakat di Desa Pijot baru pada tahap memiliki sanitasi layak, di mana setiap rumah memiliki kloset leher angsa dan penampungan tinja. Sebagaimana sanitasi layak pada umumnya, penampungan tinja yang digunakan belum kedap dan hanya berupa buis beton yang dasarnya tidak diberi perkerasan. Selain itu, toilet juga masih menggunakan saluran pembuangan lantai biasa yang terhubung langsung ke saluran drainase desa. Sistem sanitasi seperti ini, selain belum aman, juga rentan terhadap bahaya iklim seperti banjir. Air banjir dapat dengan mudah masuk ke penampungan tinja dan saluran drainase desa sehingga meluap dari kloset maupun floor drain. Hal ini menjadi salah satu penyebab lebih dari 14% penduduk di Kabupaten Lombok Timur masih melakukan praktik BABS karena sarana sanitasi yang tidak berfungsi. Oleh karena itu, untuk mendukung sistem sanitasi yang aman dan berketahanan iklim, dibutuhkan sosialisasi dan pembangunan toilet yang tahan banjir. Penelitian ini bertujuan untuk membuat desain toilet tahan banjir serta melakukan pembangunan toilet tahan banjir di Desa Pijot. Mitra penelitian ini adalah Lingkaran Pendidikan Alternatif (KAPAL) Perempuan hasil binaan LPSDM. Dari segi teknis, sebuah toilet tahan banjir perlu memenuhi tiga kriteria: mampu mencegah intrusi air pada saat banjir, mampu mengalirkan air buangan di tengah kondisi banjir, dan memiliki sumber air yang dapat beroperasi ketika banjir. Pencegahan intrusi air banjir dilakukan dengan peninggian bangunan toilet di atas muka air banjir serta pemasangan check valve pada jalur pipa sebelum kolam sanita untuk mencegah air banjir memasuki tangki septik dan kloset.

				Pengaliran air buangan saat kondisi banjir dicapai dengan menanam tangki air khusus yang berfungsi sebagai wadah tampungan baik untuk air buangan dari floor drain maupun air keluaran tangki septik pada saat check valve dalam kondisi tertutup. Pasokan air bersih dijaga dengan menempatkan pompa air serta toren pada dak atas toilet. Selain itu, untuk menjaga keamanan lingkungan, toilet menggunakan tangki septik prefabrikasi dan pengolahan tersier kolam sanita dengan tanaman Ekor Kucing (T. latifolia) dan bunga Tasbih (C. indica) yang berfungsi mengurangi kadar nitrogen dan fosfor pada air buangan. Keseluruhan desain dari toilet ini menggunakan alat dan bahan yang tersedia di pasaran untuk mempermudah proses pembangunan. Penerima manfaat toilet tahan banjir ini berjumlah 30 Kepala Keluarga di Desa Pijot. Dengan adanya pembangunan toilet tahan banjir yang disosialisasikan kepada masyarakat penerima manfaat, diharapkan masyarakat lebih memilih untuk menggunakan toilet tahan banjir yang dibangun sehingga dapat mengurangi praktik BABS. Selain itu, diharapkan desain toilet tahan banjir ini ini dapat dijadikan acuan di daerah lainnya.
7	Inas Imtiyaz	UI	Vulnerability and daptation Response for Sanitation by Households in the face of Climate Change: Study case in four cities in Indonesia	Climate change in Indonesia has emerging impacts on sanitation systems which affects the public health. Globally, it is understood that low-income households with vulnerable sanitation facilities have the greatest potential to face challenges as a result of climate hazards. Such impacts can be directly felt by the community in relation to their toilets and onsite containment systems. This study was focused on four cities in Indonesia with high risks of climate hazard, namely Bekasi, Palu, Makassar and East Lombok. Specifically, this paper examines the impact of climate change on the domestic on-site sanitation service chain, with a focus on household experiences. Moreover, the study investigated how households are adapting to climate change in terms of sanitation and their aspirations for future adaptations mechanisms. Several quantitative and qualitative methods were used to collect data on the four cities, including household survey, focus group discussion (FGD), in-depth interviews and transect walks. All activities were carried out from July to November 2020. A total of 412 households were surveyed by local enumerators for all cities except Bekasi due to the Covid-19 situation. Telephone interviews were conducted specifically for Bekasi City respondents. Furthermore, six FGD groups were conducted with five separate participants between men and women. As for the Bekasi FGD, in-depth interviews were conducted online for four male and female participants. Descriptive data analysis was carried out to provide an overview, results, and analysis of research data quantitatively. The four cities in Indonesia in this study experienced climate hazards, such as floods, droughts, sea level rise, and strong winds. The largest percentage of climate hazards experienced by households in Bekasi, Makassar, Palu and East Lombok were floods of 39% and only a 2% difference in drought also affected the community (37%). In the last five years, households experienced more frequent (38%) and more intense (36%) floods. This resulted in 61% of respondents not being able to use their toilets during floods. In addition to reduced access to the sanitation services, desludging also could not be carried out during events. Alternative toilets were used as an option to meet needs during climate events such as using a neighbor or family member or friend's toilet, community toilet, public toilet or toilet at an institution or returning to open defecation. A third of the household respondents chose to use the toilet a neighbor or family member or friend's toilet over other options. However, the percentage for doing open defecation was high, such as during a drought as many as 30% of respondents chose to this response. In addition, households demonstrated various strategies to deal with toilet problems during a drought, so that the toilet can still be used. These coping mechanisms included to store water with a percentage of 83%, use or flush less water 53%, and/or connect or

				find another water supply 36%. The majority of households responded in a simple way to respond to the impact of climate hazards on their sanitation facilities, although it can be said to be less proactive, this method is quite effective in dealing with drought problems in the short term. These impacts on households and coping strategies demonstrate a need for increased attention to climate-resilient sanitation. Improving and creating climate-resistant sanitation, both in the long term and in the short term, is a shared responsibility between the Government and the community. With the development of policies accompanied by the development of climate-resistant sanitation system infrastructure can be a real action to make it happen.
8	Zuli Rodhiyah	Universitas Jambi		Danau Sipin merupakan salah satu tempat wisata bagi masyarakat yang berada di Kota Jambi. Jarak dan kemudahan akses menuju Danau Sipin menjadikan destinasi ini salah satu pilihan utama bagi masyarakat Kota Jambi dan sekitarnya. Tempat wisata Danau Sipin memerlukan dukungan manajemen dan fasilitas sanitasi yang mendukung terciptanya wisata yang sehat. Penelitian ini dilakukan untuk mengevaluasi penerapan sanitasi Danau Sipin, Kota Jambi. Penelitian ini dilakukan menggunakan metode kualitatif. Penilaian sanitasi dilakukan menggunakan formulir penilaian pemeriksaan kesehatan lingkungan (Inspeksi Sanitasi) Objek Wisata (Peninggalan sejarah, taman rekreasi, wisata alam, dan lain-lain). Penilaian sanitasi tempat wisata Danau Sipin mendapatkan skor Variabel Upaya I (Komponen Lingkungan) sebesar 60 %, Variabel Upaya II (komponen Fasilitas Sanitasi) sebesar 48,7 %, Variabel Upaya III (Komponen Lain) sebesar 22,5 %, sedangkan total skor keseluruhan variabel sanitasi yang diperoleh sebesar 41,2 %. Sanitasi Danau Sipin dinyatakan tidak laik sehat karena skor keseluruhan variabel di bawah 65 %.
9	Rachma Sekar Utami	Institut Teknologi Sumatera	Status Mutu Air Tanah di Kawasan Kumuh Kota Bima dengan Menggunakan Metode Indeks Pencemar sebagai Upaya Pemantauan Kualitas Air Baku untuk Kebutuhan Higiene dan Sanitasi	PENDAHULUAN Peningkatan pertumbuhan penduduk di Indonesia yang tidak diiringi dengan ketersediaan sarana dan prasarna yang layak dapat memicu munculnya kawasan kumuh (Harisun, dkk., 2019). Kota Bima merupakan salah satu wilayah di Indonesia yang memiliki banyak kawasan kumuh termasuk di dalamnya Kelurahan Paruga dan Sarae yang merupakan daerah yang masuk dalam program KOTAKU, PUPR Kota Bima. Kedua kelurahan tersebut memiliki sistem pengolahan air limbah domestik yang masih buruk di mana sebagian air limbah langsung dibuang tanpa dilakukan pengolahan langsung ke tanah dan ke badan air dan masih banyak tangki septik yang tidak sesuai SNI dan jarak air tanah sebagai air bersih <10 m dengan pembuangan air limbah atau dengan kata lain tidak memiliki akses aman (PUPR Kota Bima, 2020). Permasalahan tersebut dapat berpotensi mencemari air air tanah sebagai peruntukan kegiatan higiene dan sanitasi akibat dari pencemaran air limbah domestik. Namun, dekatnya kedua lokasi penelitian dengan laut juga dapat menyebabkan pencemaran air akibat sumber pencemar lain. Penelitian ini bertujuan untuk mengetahui kualitas serta status mutu air tanah di kawasan kumuh Kota Bima menggunakan metode indeks pencemaran berdasarkan Permenkes RI Nomor 32 Tahun 2017 dan KepMenLH Nomor 115 Tahun 2003. METODOLOGI Pengambilan data penelitian dilakukan pada 1-8 November 2021. Lokasi penelitian yaitu RT 9 dan RT 12 Kelurahan Paruga serta RT 2, 3, dan 4 Kelurahan Sarae, Kecamatan Rasanae Barat, Kota Bima dengan pemilihan lokasi berdasarkan Surat Keputusan Walikota Bima tentang Penetapan Lokasi Perumahan dan Permukiman Kumuh di Kota Bima serta survei lapangan. Penentuan lokasi pengambilan sampel dilakukan dengan metode purposive sampling yaitu dengan pertimbangan untuk melihat adanya pengaruh kawasan kumuh terhadap kualitas air tanah. Sampel air tanah terdiri dari air sumur bor dan air sumur gali pada Kelurahan Paruga adalah sebanyak 6 (enam) lokasi dan pada Kelurahan Sarae adalah

				sebanyak 3 (tiga) lokasi. Pengambilan sampel dilakukan secara grab sampling dengan prosedur pengambilan serta perlakuan sampel dilakukan berdasarkan SNI 6989.58:2008 tentang metoda pengambilan contoh air tanah. Sampel air tanah yang telah diambil kemudian dilakukan pengujian yang terdiri dari parameter temperatur, pH, TDS, warna, kekeruhan, kesadahan, mangan, nitrat, sulfat, dan zat organik. Pengujian dilakukan secara in-situ dan di Laboratorium Kualitas Air, Institut Teknologi Bandung yang telah terakreditasi. Metode pengujian kualitas air tanah di laboratorium terdiri dari APHA-2120-B, APHA-2130-B, APHA-2340-C, APHA-3500-Mn-B, APHA-4500-NO3-B, APHA-4500-SO4-E, dan SNI 06-6989-22-2004. Analisis kualitas air tanah dilakukan dengan membandingkan hasil pengujian dengan baku mutu air untuk kegiatan higiene sanitasi pada Permenkes RI Nomor 32 Tahun 2017 untuk air tanah dan untuk penentuan status mutu air dilakukan menggunakan metode indeks pencemaran (IP) berdasarkan KepMenLH Nomor 115 Tahun 2003. HASIL DAN PEMBAHASAN Lokasi pengambilan sampel air tanah yang meliputi air sumur bor dan air sumur gali terdiri dari 9 stasiun, yaitu 6 stasiun (3 stasiun di RT 9 dan 3 stasiun di RT 12) pada Kelurahan Paruga dan 3 stasiun (masing-masing 1 stasiun pada RT 2,3, dan 4) pada Kelurahan Sarae. Air tanah pada lokasi studi dimanfaatkan untuk kegiatan mandi, cuci, dan kakus (MCK) tanpa digunakan sebagai air minum, Kualitas air tanah yang dianalisis terdiri dari 10 parameter, 3 parameter dilakukan pengukuran secara in-situ (TDS, temperatur, dan pH) dan 7 parameter lainnya (warna, kekeruhan, kesadahan, mangan, nitrat, sulfat, dan zat organik) dilakukan pengujian di laboratorium. Untuk parameter warna, kekeruhan, temperatur, nitrat, pH, dan sulfat semua stasiun memenuhi baku mutu kegiatan higiene sanitasi Permenkes RI No.32 Th.2017. Parameter-parameter yang memiliki konsentrasi pencemaran dapat disebabkan oleh pencemaran air limbah domestik. Kontaminasi dapat terjadi karena dekat nya air bersih dengan saluran buangan air limbah grey water dan pembuangan air limbah kakus atau black water yang langsung ke tanah tanpa pengolahan seperti menggunakan tangki septik. Dengan kedalaman sumur air bor hanya berkisar 5-12 meter dan air sumur gali 3-6 meter dapat berakibat pencemaran akibat resapan air limbah. Lebih lanjut, pada beberapa parameter terjadi fluktuasi antar stasiun yang berbeda yang disebabkan oleh kemungkinan faktor-faktor lain selain kontaminasi air limbah domestik (intrusi air laut, struktur batuan, karakteristik tanah, dan endapan sulfida) dengan konsentrasi tertinggi pada air sumur bor Kelurahan Paruga yang berada di bantaran sungai pada banyak parameter. Status mutu air tanah yang dilakukan menggunakan metode indeks pencemaran berdasarkan KepMenLH Nomor 115 Tahun 2003 dengan hasil perhitungan Pij untuk Stasiun2 (sumur gali) (2,395) dan Stasiun8 (sumur bor) (3,385) berada pada kategori cemar ringan (1,0≤Pij≤5). Untuk Stasiun1 (sumur bor) (0,598), Stasiun3 (sumur bor) (0,717), Stasiun4 (sumur bor) (0,788), Stasiun 5 (sumur gali) (0,918), Stasiun6 (sumur gali) (0,834), Stasiun7 (sumur gali) (0,792), dan Stasiun9 (sumur bor) (0,564) berada pada kategori memenuhi baku mutu (Pij<1). Perolehan nilai Pij bergantung pada konsentrasi tertinggi dan konsentrasi rata-rata tiap sampel yang berbeda antar stasiun satu dan lainnya. Pada nilai indeks pencemaran sampel air sumur gali relatif lebih tinggi dibanding air sumur bor, kecuali sampel Stasiun8, yang artinya tingkat pencemaran pada air sumur gali lebih tinggi dibandingkan air sumur bor. KESIMPULAN Kualitas air tanah yang terdiri dari air sumur bor dan sumur gali yang diuji dari 10 parameter, berdasarkan Permenkes RI Nomor 32 Tahun 2017 untuk parameter TDS, kesadahan, mangan, dan zat organik tidak memenuhi baku mutu.

				Status mutu air tanah yang dihitung berdasarkan KepMenLH Nomor 115 Tahun 2003 pada 9 stasiun adalah 7 stasiun memenuhi baku mutu serta 2 stasiun lainnya cemar ringan.
10	Yudith Vega Paramitadevi	Faculty of Civil Engineering, Universitas Indonesia	Systematic Literature Study of Water, Sanitation and Hygiene (WASH) and Biosecurity Intervention as a Determinant of the Danger of Antimicrobial Resistance (AMR) Prevalence in the Livestock Environment	Microbial resistance to antibiotics (AMR) can come from various sources, including agricultural activities, namely the livestock sector, the fishery sector and the plantation sector. The agricultural sector supports adequate food for both developed and developing countries, which is vulnerable to AMR exposure, especially the livestock sector. Until now, the risk factors for AMR are still being comprehensively studied to determine how much influence the factors have in building a quantitative microbial risk assessment model (QMRA). Risk factors can be approached through faecal/ manure contamination risk factors as pathogens, including hazard factors, pathway factors and indirect factors. Hazard factors, according to WHO (2021), consist of misuse of antibiotics, unavailability of adequate facilities and infrastructure (Water, Sanitation and Hygiene/WASH) and inadequate infection prevention and control (Inadequate Infection Prevention and Control/IPC). Types of animal farms, environmental routes, consumption of antibiotics, and types of livestock are pathway factors, while urbanicity and multi-dimensional wealth index are indirect factors. The Onehealth policy raises the question of whether WASH efforts must also be applied in the livestock sector and other efforts such as Biosecurity and to what extent the availability of WASH influences the opportunities for zoonotic pathogens to arise for workers in the animal farm. This study offers a systematic review of the latest developments in WASH applications in the livestock sector, the effect of WASH interventions on the risk of exposure to zoonotic pathogens for workers and other hazard factors other than WASH that can build an AMR exposure model as part of the QMRA. The methodology used in this study is PRISMA 2020, a bibliometric approach and a qualitative approach to determine and assess 58 journals related to WASH interventions in the livestock sector in 2007 – 2022. WASH interventions based on the results of a literature review have increased over the last ten years as cross-sectoral One health policies. Hygiene topics commonly practised have been integrated with the biosecurity program, and these topics will increase in the future. Only 33% of interventions in the form of improving the quality and quantity of clean water were found in this study. The interventions included disinfection, acidification, and efforts to increase the discharge of water sources. The review was analyzed based on the odds ratio (OR) from 58 works of literature, comparing the intervention's influence on the chance of disease occurring around the livestock area. The OR range for the WASH intervention ranged from 0 - 2, while the WASH-Biosecurity combination intervention was in the range of 0.07 – 18.1. The more complete the types of interventions carried out, the more significant the impact of the risk of disease exposure on workers is reduced. Based on the literature review, other hazard factors besides WASH that can contribute to QMRA modelling in AMR are obtained, namely medical and non-medical solid waste management, vaccination programs for livestock, policies limiting the use of antibiotics only for sick animals, the level of knowledge of farmers about the use of antibiotics, management and cage design. Efforts with an OR level > 5 are dominated by WASH-Biosecurity combination interventions in the form of consistently cleaning the environment around the livestock area, limiting livestock of different species, separating sick livestock, periodic disinfection of stables, and limiting wild animals to the animal farm. In developing countries where most livestock is smallholders, there are difficulties in implementing biosecurity as a whole, so optimizing the application of hygiene and other hazard factors are proposed as the best practice for reducing AMR. Furthermore, through consistent

				WASH efforts by cooperating with interested parties, the One Health policy will reduce exposure to AMR in the livestock environment.
11	Iva Yenis Septiariva	Universitas Sebelas Maret	Life Cycle Assessment Approach to Evaluation The Performance of Wastewater Treatment Plant for Reuse Water in Surakarta	1. Background Jebres Village is a village located in Jebres District, Surakarta City with the largest population of 32,974 people, there is no sewerage piping service (Burgos et al. 2021). In the Jebres village area, there is the largest university in the city of Surakarta, namely the Sebelas Maret University. Each college building uses an on-site disposal system, namely the disposal that flows into the septic tank with periodic drainage, while in the bathroom, washing and worship areas, the waste is channeled directly without processing into the building drainage channel. The channel also receives waste from residents in several areas in the Jebres sub-district and empties into the Bengawan Solo River. This causes a decrease in the quality and quantity of the river as a receiving water body, even though the Bengawan Solo River has become the community's raw water source when the need for clean water sources increases. Therefore, the Waste Water Treatment Plant (WWTP) has been built since 2017 on the campus as an environmentally sound wastewater treatment system to deal with domestic wastewater at the campus & the Jebres area. However, each type of wastewater treatment plant has an impact on the environment from the treatment process or from the operating support equipment. Wastewater treatment plants have the potential to emit significant amounts of greenhouse gases, namely carbon dioxide (CO 2), methane (CH 4), and nitrogen oxides (N 2 O) (Sazali, 2020).
12	Nanda Savira Ersa	Universitas Malikussaleh		The rapid development of the world population has finally led to a new problem, including the increase in household waste generation. Waste management in most of Indonesian cities is still a major problem in environmental management. Some issues include the lack of transport trucks, waste treatment facilities, community awareness and education, over-capacity landfills was should be faced by the government. Undeniably, the community needs to be involved in improving waste management. In this research, a user-friendly waste management application was developed to help implement community-based waste management. This research was conducted through 2 stages, i.e. interviews and application development. Interviews were conducted with village officials, waste operators and the community to find out information regarding the existing waste management condition and application features they might be expected. Furthermore, a user-friendly Android-based application was developed to help manage waste community-based independently. In the next stage, a survey was conducted on users regarding their willingness to implement the applications offered. The data needed include the current waste management conditions, technical facilities and infrastructure for the waste management system, the number of houses serviced and workers, and the facilities available. The waste management system at Geulanggang Baro village, Bireuen residence, Aceh Province, Indonesia was demonstrated community-based waste management potential to improve. It was managed independently by volunteers coordinating with local village officials and consisted of one driver and one collector. The integrated waste management in this village was started in 2019, with only 24% of the total village population involved. Previously, the village community did not have waste transportation facilities. Therefore, the people are forced to manage their waste by burying, burning and dumping it on empty land. By 2022, residents participating in waste management was increased to 38%. Moreover, to support waste management activities, there are some facilities provided, such as a pick-up car, shovels, and other Personal Protection Equipment (PPE); masks and gloves. Waste collection is done twice a week, on Wednesday and Sunday nights. Currently, Geulanggang Baro village does not have a temporary bin. It made difficulties to transfer waste. However, after the waste was collected, the car was parked

				around an open field. The next day, the trash was transported by a garbage truck belonging to the environmental services, Bireuen regency to the Peudada landfill. After going through interviews related to user needs, the application is developed as simply as possible to support users with different interests. The intended users include waste operators, village officials and the community. This application has features such as History, Selling Waste, Notifications and Educational Articles. The Selling Waste feature and Notifications are the requested features by the users. The Selling Waste is designed to make it easy for the public to find out the potential waste that can be received from selling inorganic waste to operators. Operators and village officials also benefit from this feature to increase income for waste management. Furthermore, the Notification feature was created to remind the public when to pay monthly waste retribution. Through this application, it is hoped that waste management in the village of Geulanggang Baro, Bireuen regency can run more efficiently and profitably for the users.
13	Ansiha Nur	Universitas Andalas	ENVIRONMENTAL HEALTH RISK ASSESSMENT IN SETTLEMENT AREA IN BATANG ARAU RIVER WATERSHEDS, PADANG WEST SUMATERA INDONESIA	1. INTRODUCTION The Batang Arau River is one of the largest rivers in West Sumatra with a length of 30.9 km2. The quality of the Batang Arau River has been declining over the past few years, as shown by a 5- fold increase in pollution load, from 4.2 mg BOD/L in 2013 to 21.78 mg BOD/L in 2015 (Work Unit of the Sumatra River Region Office V, 2016). Populated areas and industrial activities along the river are the main causes of this pollution. Seberang Padang Village, one of the communities in the Batang Arau Watershed (DAS) region, has a total area of roughly 154 hectares (BPS Kota Padang, 2016). Seberang Kelurahan is a flood-prone area in the Batang Arau watershed that is densely populated (47.89 people/ha) and has a population that is more than 40% below the poverty line. In terms of environmental health issues, this subdistrict is located in a high-risk area. In Seberang Padang Village, 64.97% of residents dump waste and excrement into the river, yards, and drainage areas. It is necessary to conduct a study in order to evaluate the Seberang Padang Village's current sanitary and environmental health conditions. The Environmental Health Risk Assessment (EHRA) Study is one of the studies that can describe sanitation conditions and behavior with regard to public health at the sub-district, district, and city levels. In a village/kelurahan, district, or city, this study describes the presence of sanitation facilities and behavior that risks public health. Sanitation aspects evaluated include water sources, sewerage, latrines, garbage disposal services, and environmental drainage. Meanwhile, aspects of public health behavior include hand washing with soap (CTPS), waste handling and segregation, drinking water treatment, and open defecation (BABS). The aim of the study was to analyze the condition of sanitation facilities and public health behavior in the Seberang Padang Village and obtain the Sanitation Risk Index (IRS) in the Seberang Padang Village.
14	Ignatius Anandhityo Dwiputra	Trisakti University		As the center of government and the center of the economy, Jakarta has various problems from the high flow of urbanization to this city . One of the problems that occurs is the high population density in several areas in Jakarta. This density tends to lead to social, economic, environmental and so forth inequality problems. The densely populated locations selected were Johar Baru District, Central Jakarta and the Tanah Tinggi subdistrict was selected as a pilot project as an example of planning for other sub-districts. Tanah Tinggi sub-district was chosen because it has the highest open defecation progress compared to other sub-districts, namely 25.13% and has the highest dengue hemorrhagic fever sufferer rate, namely 0.24%. The purpose of this plan is to find solutions in the sanitation sector that are appropriate to the problems in the related sub-districts and to recommend the right technology to improve health rates.

				The data collection method is carried out by surveying and seeking data from relevant agencies as well as the governments. After getting some initial data such as population density figures and health figures, it is necessary to collect data taken from questionnaires. The questionnaire was made to find problems that occur in the community so that in making it, it is necessary to determine important points. These points concern the ownership of a septic tank as a simple wastewater treatment in the house, the type of water used and the use of the water, the cleanliness of the use of the bathroom and the economic level of the community seen from the type of building occupied. Determination of the questionnaire sample using the Slovin formula and purposive sampling technique. Questionnaire data collection was carried out directly using the mWater application to facilitate data retrieval. The mWater application also makes it easy to do geotagging so mapping can be done more quickly. The questionnaire was distributed to 11 RWs with the criteria of high population density and poor access to sanitation. Divided into 82 respondents with 1 house for each respondent. Data collection was carried out for approximately 1 week. After collecting data using the questionnaire method, followed by data analysis. The result is that in 1 house, the average family member in 1 house is between 3 - 6 members with a house area that varies with an average of 3 - 24 m 2 . The type of house building that shows the economic level of the community shows that the average yield of residential buildings in Tanah Tinggi sub-district is semi-permanent with a value of 55% and is comparable to PDAM costs per month with the highest score of 31.5%, which is between 75000 - 130000. The community in Kelurahan Tanah Tinggi owns 62% of the septic tank but when asked further the existing septic tank has never been emptied, indicating that there is a leak in the septic tank. As for sanitation disease itself, people rarely experience it because 55% people of the sample use PDAM water that has been tested. Each RW has advantages and disadvantages in finding the right sanitation solution in terms of topography, available sanitation infrastructure, and the community's economic level. The solution that can be offered is to find vacant land to be used as a communal WWTP in the form of a shared septic tank for 5-10 houses. If there is a larger plot of land, a package WWTP can be built that can function for 10-20 houses. Communal WWTP or shared septic tanks can be charged by the community for future management and processing. If the community's residence already has a septic tank, then the septic tank can be relocated if the land in the house is still sufficient. Every areas in Tanah Tinggi sub-district has sewerage network that link to each other so it is easier to plan a shared septic tank or wastewater treatment plant but it has its very own problems. The densely populated areas make the most area is full of building that also has very narrow street and areas. In the north side of Tanah Tinggi sub-district, RW 01, 03, 014, and 011, the topography in the area tends to decrease towards the south so that it can be planned on the available vacant land or below the streets for the development of simple wastewater treatment plant. Any other RWs has connect its sewerage into main river on the eastern side of Tanah Tinggi sub-district, so its topography also tend to decrease. On the banks of the river, there is still vacant land where a package WWTP can be built which is sufficient for around 10 houses, and it is for RW 08, 09, 010, 012, 013. For RW 06 and 07, the option for its problem is to build shared septic tank because the areas is far from the river. RW 06 is still sufficient for its house to build or expand their septic tank because the house area is tend to wide.
15	Hajrah	UNICEF Makassar Field Office	Municipal Information System (MIS): Accelerating Safely	Indonesia is committed to achieve SDGs targets, including safe and sustainable sanitation. More than 97% of districts in Indonesia rely on off-site sanitation, which needs chain service from septic tanks to domestic waste-water treatment plants (DWWTP). There are 16 DWWTPs out of 24 districts in South Sulawesi, although only 13 are operational (2 units

			Managed Sanitation Coverage in Pinrang, South Sulawesi	overload and 8 units operate on unscheduled desludging). This condition is the consequence of a lack of management capacity, which includes inability to maintain customer database. Data is a valuable asset that requires to be updated on a regular basis. However, gathering data is often time-consuming and resource intensive. When data is out of date, the risks of inadequate or poor planning and decision-making escalate. Pinrang district is one of the most advanced sanitation districts in South Sulawesi. Pinrang has received awards for successfully implementing Community Led Total Sanitation (CLTS)/STBM in 2019 and 2020, as well as for achieving Open Defecation Free (ODF) status by 2019. Furthermore, the Pinrang district government has announced the implementation of safe sanitation through Bupati Decree Number 7/2018 on scheduled desludging program. The primary mandate is to obligate the civil servant to participate in the scheduled desludging services. In accordance with these directives, the DWWTP continues to improve service performance, including optimizing the operation of infrastructure facilities. Intending to accelerate the scheduled desludging program's implementation, DWWTP Pinrang actively participated in horizontal learning through various of multi-stakeholder partnership program. Begin by replicating the operation and maintenance of DWWTP with Sidoarjo District and Makassar City, then improving the operator's capacity, preparing potential customers' data for the scheduled desludging program through a septic tank survey in 2021, and collaborating with the District Health Office on safe sanitation inspections and septic tank surveys by sanitarians in 2022. The septic tank survey collected data from 700 households who are potential consumers of scheduled and unscheduled desludging services. In order to improve the quality of customer database management and service management, DWWTP Pinrang requires the support of the Information Management System (IMS) platform. This IMS will eventually serve as a foundation for a variety of web applications that manage customer databases and domestic wastewater services. In 2022, DWWTP Pinrang initiated the development of the Municipal Information System Domestic Wastewater Treatment Plant (MIS DWWTP), as an initial step toward supporting the IMS platform. This initiative was supported by UNICEF in collaboration with Yayasan BaKTI. The main purpose of the MIS is to support the implementation of a scheduled sludge service program through the development of an android-based database application that will be used by DWWTP in implementing a more advanced local domestic wastewater management system. The application was developed in two versions: a web-based version, which are utilized by domestic wastewater decision makers for purpose of monitor, plan and manage data and. While the android version to be used by DWWTP operator team in the field for information collection of the customer including name, image, and address. Several beneficial outcomes have resulted from the development of the MIS. The DWWTP data team is able to become the operator to manage the implementation of the Scheduled Sludging Service prospective customer survey, which is carried out based on the DWWTP MIS application. The operators could also act as enumerators for the customer survey on the field. Additionally, the decision maker, the board of leaders, and the related stakeholders are able to use the MIS DWWTP application in planning and monitoring the implementation of domestic wastewater management, and also get a new perspective on how to measure the progress of safely managed sanitation through the updated data that has been stored on the website. Data from the Statistical Bureau show that Pinrang has 119,956 households as of 2021, and only 3% of households have been desludging. Along with the improvement of the customer database through the MIS, there are now 8,332

				households that have been registered. In 2023, those numbers will represent potential customers. With the usage of SNI-standard septic tanks and the Safely Managed Sanitation campaign in Pinrang District, the number of consumers will continue to grow. Accordingly, the percentage of safely managed sanitation will increase by more than 7% in 2023. However, this improvement could only be achieved with adequate operation and maintenance support at DWWTP Pinrang.
16	Mar'atusholihah	Institut Teknologi Sepuluh Nopember		In Surabaya City, Wastewater treatment is dominated by onsite treatment using anaerobic treatment types such as septic tanks, latrine, and anaerobic baffled reactors (ABR). The anaerobic type is used because it has a high percentage of removal and produces less sludge. Unfortunately, septic tanks and pits latrine can contribute GHG emissions of 55 Mt CO2eq/year or contribute 4.7% of the methane gas produced in the world in 2021. Meanwhile, aerobic type treatment (Centralized Wastewater Treatment Plant) has a smaller CH4 emission factor than anaerobic, but indirect emissions in centralized WWTPs originating from the use of chemicals and building structures, and the use of electrical energy contribute 17% and 3% of the total WWTP emissions, respectively. Whereas at onsite treatment, indirect GHG emissions from sludge transportation have a GHG contribution of 2.5%. In previous research GHG emission inventory just calculated direct sources and uses the average Total Organic Wastewater (TOW) in Indonesia. Meanwhile, TOW specific in Surabaya are limited. Therefore, it is necessary to analyze the characteristics of domestic wastewater based on the type of treatment, to produce more specific direct GHG emissions. In addition, this study also calculates GHG emissions from indirect sources such us transportation of sludge and operational pump in wastewater treatment plant. Data collection with random sampling of wastewater treatment in Surabaya city. Based on technology used and influent of wastewater treatment (blackwater and greywater). Samples were analyzed using the Winkler method to measure Biochemical Oxygen Demand (BOD) concentrations and the Kjeldahl method to measure Total Nitrogen (TN). Then, concentration BOD and TN used to estimate direct GHG emissions CH4 and N2O, respectively. Calculated GHG emissions based on Intergovermental Panel Climate Changes (2019), where emissions factor of direct GHG are 0.33 kg CH4/kg BOD (Septic tank), 0.48 kg CH4/kg BOD (anaerobic reactor), 0.3 kg CH4/kg BOD (Discharge WWTP), and 0.0052 kg N2O-N/ kg N (Discharge WWTP). Meanwhile, indirect GHG emissions calculated from transportation sludge (from WWTP to Sludge treatment) and operasional WWTP was electricity of pump based on IPCC and regulation in Indonesia. Emissions factor of transportation (light duty truck-diesel) and operational pump are 74100 Kg CO2/TJ, 3.6 Kg CH4/TJ, 3.6 Kg N2O/TJ and 0.87 ton CO2/MWh. The results of GHG emissions are classified into 8 types at village WWTP, 4 types on the restaurant WWTP, and 7 types based on the Rusunawa WWTP. There are ABR and Filtrasi with blackwater (BW) influent well operated and not operated, Anaerobic biofilter with greywater (GW) influen well operated and not operated, ABR and Filtrasi with BW and GW influen well operated and not operated, septic tank well operated and not operated, septic tank and ABR and Biofilter with BW and kitchen wastewaster well operated, not well operated, and not operated. Total GHG emission from domestic wastewater in Surabaya was 2,303.33 Ton CO2eq/year (direct emissions) and 6.522 Ton CO2eq/year (indirect emissions). The GHG emissions from ABR and Filtration with combine system was (0.1414 ton CO2/person.year) higher than anaerobic biofilter, septic tank with separated system and combine system. Whereas, WWTP treatment lowest contributed GHG emission is Anaerobic biofilter (greywater) amount of 0,0006 ton CO2/person.year. However, anaerobic biofilter (greywater) contributed higher pollution is freshwater/body water.

CLUSTER 4: SOCIAL, BEHAVIOR AND ECONOMIC ASPECT OF WASH / ASPEK SOSIAL, PERILAKU DAN EKONOMI WASH, COORDINATOR /KOORDINATOR : DANIEL, TEAM / TIM : NI MADE UTAMI DWIPAYANTI, PROF SRI IRIANTI				
NO	**NAME /NAMA**	**UNIVERSITY / INSTITUTION UNIVERSITAS / LEMBAGA**	**TITLE / JUDUL**	**ABSTRACT / ABSTRAK**
1	Fathurrachman Fachri Nurpasya	Institut Teknologi Bandung	Relationship of knowledge of household attitude and behavior with household waste management in paringin district, balangan regency	Proper and frequent handwashing with soap (HWS) has been proven effective to prevent the ransmission of SARS CoZV-2 and other infrectious diseases such as gastrointestinal and respiratory tract infections, trachoma, and hookworm infections. The implemented social restrictions and "5M" policy, including HWS, has been successful in lowering the number of COVID-19 cases in Indonesia. The decreasing COVID-19 cases has led to the easing of health protocols and social restrictions. However, precautions are important since increased mobility and euphoric behaviour can re-escalate COVID-19 cases. Against this background, we aim to investigate: (1) the level of HWS behaviours after the easing of COVID-19 restrictions; and (2) the effect of contextual, technological, and psychosocial factors to these behaviours. Focusing in urban Jakarta, this study combines RANAS (Risk, Attitude, Norms, Abilities, and Self-regulations) and IBM-WASH (the Integrated Behavioural Model for Water, Sanitation, and Hygiene) frameworks. This study used a validated questionnaire with five main components: (1) respondent attributes; (2) behavioural items; (2) psychosocial factors; (3) contextual factors; (4) technology; and (5) HWS behaviours as the mixed effect of the first four components to HWS behaviour has limitedly studied. Using a snowball sampling strategy, 316 urban Jakarta residents participated in this research. A descriptive analysis was performed to understand the distributions of the data. Using the three-box method, low, moderate, and high levels of HWS behaviours were determined. A principal component analysis (PCA) was applied to reduce the dimensions of the data. Independent variables (i.e. psychosocial, contextual, and technological variables) were then regressed to see which factors have a major influence on the implementation of hygiene behaviour by bootstrapping technique. The results revealed that 62% of the respondents have high HWS behaviour, even after the easing of COVID-19 restrictions. The regression analyses indicate that if the independent variables were regressed separately, psychosocial factors have the highest influence on hygiene behaviour (adjusted R2 =0.507). However, the combinations of the effects of psychosocial, contextual, and technological factors provide the highest adjusted R2 (0.520). This study further provides recommendations in all areas of Risks, Attitude, Norms, Abilities, and Self-regulations (RANAS) using the standard Behavioural Change Technique (BCT) table. The results should be considered in designing health behaviour promotions and interventions, especially in regard to maintaining personal hygiene behaviours in the post-pandemic situations.
2	Adrian Chrisnahutama, Ni Made Sukartini	Universitas Airlangga	Drinking Water, Sanitation, Handwashing Facilities, Environmental Hygiene and Diarrhoea among Under-Five (U 5) in Indonesia	Provision of clean drinking water, improved sanitation and basic handwashing facility are essential to prevent people to suffer various waterborne diseases, such as diarrhoea. Thus, leads to improving human health and human capital. This condition can lead to improve economic participation, hence help to increase national incomes, and reduce poverty. Globally, there are 1.7 billion cases of under-five (U5) diarrhoea every year. Moreover, diarrhoea is also responsible for killing 525.000 U5 every year, making one of the leading causes of children deaths. These high numbers are mainly contributed by numerous low- and middle-income countries. Lack of the provisions of those infrastructures are believed to be the cause of high incidence of diarrhoea. Furthermore, the drinking water in those countries are often contaminated due to pollution, making diarrhoea alleviation in these countries a complex issue. Indonesia also

				reflects this pattern. This study provided the empirical evidences of the effect of various sources of drinking water, sanitation, handwashing facility and environmental hygiene on diarrhoea incidents among under-five (U5) in Indonesia at household level. This study applied logistic regression analysis on 2012 and 2017 Indonesian Demographic and Health Survey (IDHS), a nationally representative dataset. This study divided drinking water as follows: 1) Surface water; 2) Unprotected dug well or spring; 3) Bottled/refill water; 4) Protected dug well or spring; and 5) Piped water. Sanitation facilities were divided as follows: 1) No facility; 2) Pit latrine; 3) Flush toilet which is shared/public; 4) Flush toilet with no septic tank, and 5) Flush toilet using septic tank. Handwashing facility were divided into: 1) No facility; 2) Facility on premises without water/soap presence; and 3) Facility on premises with water and soap presence. Environmental hygiene was measured using proportion of open defecation within community. The provision of clean drinking water, improved sanitation and basic handwashing facility are improved substantially between 2012 and 2017. This indicated that Indonesia had successfully provided those infrastructures. On the other hand, diarrhoea prevalence among U5 in 2012 and 2017 did not reduce significantly. Diarrhoea prevalence among U5 in Indonesia was reported by 14.4 percent in 2012 and 14.2 percent in 2017. Moreover, the prevalence was higher on younger, poorer, and children who lived in rural area. After controlling individual and household factors, this study found that higher quality of drinking water was significantly associated with diarrhoea prevalence reduction, with piped water had the highest effect. Furthermore, only flush toilet using septic tank type of sanitation was significantly associated with diarrhoea prevalence reduction. However, this study also found that these effects were fading when the provision of higher quality infrastructures were improved within community. The provision of various handwashing facility at household was not associated with diarrhoea prevalence. This reflects that the infrastructure availability at premises was not necessarily reduce diarrhoea if clean and healthy behaviour was not implemented. The proportion of open defecation in the community as environmental hygiene indicator was associated with diarrhoea incidence escalation. This illustrates the importance of environmental factors on diarrhoea alleviation as well as improving drinking water and sanitation simultaneously.
3	Azyyati Ridha Alfian, SKM., MKM	Universitas Andalas	The Challenges of Inclusive WASH Development to Achieve Access to Sanitation and Safe Drinking Water in the Urban Slum Area of Padang City: As a Community Perspective	Background: Water and sanitation are basic human rights. Universal access to safe and equitable drinking water and sanitation is also emphasized in SDGs point 6 which is expected to be achieved by 2030. However, until now there is still low access to safe drinking water and sanitation in Indonesia. Based on Bappenas data (2022) regarding trends in access to sanitation and drinking water, until 2021 only 7.25% of households in Indonesia are in the category of access to safe sanitation, and only 11.8% of households with access to safe drinking water. With conditions like these and to achieve the SDGs targets, it is certainly necessary to develop inclusive drinking water and sanitation facilities (WASH Inclusive) by involving the participation of community groups. The irony is that the development of inclusive WASH is still a big challenge and obstacle for the people in Mata Air Village, Padang City. Mata Air Village is located in South Padang District, Padang City which is based on the Slum Decree of the Mayor of Padang City No. 163 of 2014 concerning the Location of Housing and Slum Environments in Padang City is one of the slum neighborhood areas in Padang City that needs a livable development plan, to create a better urban area. The most important environmental issue in this kelurahan is the low level of access to proper and safe sanitation and drinking water, including that there are still many households that do not have healthy latrines, resulting in fecal contamination of drinking water/clean water sources. Based on an initial survey conducted from 15 neighborhood associations (RW) and 55 neighborhood associations (RT) in Mata Air Village, there are 17 RTs spread across 10 RWs that do not yet have healthy latrines so

				that liquid waste (feces) goes directly into rivers or ditches around settlements. This certainly has an impact on groundwater pollution due to fecal contamination, this is proven by the physical condition and microbiological quality of the water sources for the surrounding community, the majority of which use drilled/dug wells that are already in a polluted condition based on Permenkes 32 of 2017, with a description of the physical condition in color/ cloudy and smelly and the results of laboratory tests conducted at several points of drinking water/clean water sources showed Coliform and Escherichia Coli (E.Coli) contamination of around 1,100 CFU/100ml. As a result of this condition, people are forced to change the source of drinking water to refill drinking water, but this condition is still a problem because laboratory tests conducted in several household locations found contamination of refilled drinking water with Coliform and E. Coli contamination values ranging 1,100 CFU/100ml and 160 CFU/100ml. This condition is of course inseparable from the low participation of the community and related parties in creating inclusive WASH development to achieve access to sanitation and safe drinking water. Based on this, this study aims to analyze the constraints and challenges in the development of inclusive WASH to achieve access to sanitation and safe drinking water in urban slum areas, especially the Mata Air Village from a community perspective. Methodology: Data collection in this study was carried out using qualitative techniques using in-depth interviews with the community. Data collection was carried out in Kelurahan Mata Air, especially in RW 11 RT 02. This location was chosen because of the condition of the residential environment which has a high risk of environmental pollution and health based on the results of brainstorming with the Head of the Kelurahan, the Head of the Rawang Health Center, Environmental Health Program Holders, and River Care Communities in Mata Air Village, Padang City. This study focuses on an approach to the community so that the selected respondents are the entire community in RW 11 RT 02, totaling 34 heads of families (KK), all of whom do not have access to healthy latrines and contaminated water sources. The data were then analyzed using transcription, coding, and categorization techniques to interpret the results. Result and Disccusion: Based on the participation of all respondents during data collection, various obstacles and challenges were encountered in the development of inclusive WASH in achieving the target of safe sanitation and drinking water facilities in Mata Air Village, including: 1) The community's knowledge is still low, including regarding access to safe sanitation, especially the provision of healthy latrines, risks of environmental and health pollution, provision and management of water sources for safe drinking water facilities, 2) Ownership of land under lease status causes the community to become constrained in carrying out development for their settlements, especially for the construction of septic tanks, 3) The environmental conditions of settlements that are not residential land make it difficult access to piped water sources (PDAM) is also influenced by the location of settlements in the highlands, 4) There is still a lack of education and promotion from related parties regarding urban repairs environmental quality. This shows that there are internal and external constraints that must be followed up immediately because if this is not immediately intervened, of course, it will have a bigger impact on environmental quality and health. Where the environment is a factor that has a big influence on the degree of public health. Various diseases can be transmitted and are caused by poor environmental conditions, of course, will have an impact on high morbidity rates in society and will also add to the burden of national development. Conculusion: Based on these conditions, it is necessary to carry out intervention efforts, cooperation, and commitment from various parties in terms of handling it. For the Puskesmas, it is necessary to carry out appropriate and more intense educational and promotional efforts for the community to foster a sense of awareness and concern for the

				environment and health. For the Municipal Government of Padang and various parties and other related agencies, it is necessary to immediately follow up on the management of land problems by helping the community to advocate for landowners so that they are equally committed to improving urban slum areas, especially in the Mata Air Village and are committed to working with the community in carrying out residential development. better, especially in inclusive WASH development to achieve the target of access to sanitation and safe drinking water.
4	Morrin Choirunnisa Thohira	Universitas Gadjah Mada	Tata Kelola Sanitasi Lingkungan Pasar Rakyat Menuju Pasar Sehat Era New Normal di Kota Yogyakarta	Background: Pasar sehat adalah kondisi pasar rakyat yang bersih, aman, nyaman, dan sehat melalui pemenuhan standar baku mutu kesehatan lingkungan, persyaratan kesehatan, serta sarana dan prasarana penunjang dengan mengutamakan kemandirian komunitas pasar. Pasar yang memiliki pengelolaan sanitasi lingkungan yang buruk akan berdampak pada kesehatan masyarakat. Sanitasi pasar rakyat yang baik dapat mewujudkan barang yang dijual bersih dan meminimalkan terjadinya penyebaran penyakit. Salah satu usaha untuk mencegah penyebaran penyakit yang dapat terjadi di pasar adalah diperlukan pelaksanaan tata kelola sanitasi lingkungan pasar yang baik terutama di era new normal. Penelitian ini bertujuan untuk menganalisis tata kelola sanitasi lingkungan pasar rakyat era new normal pada pasar rakyat di kota Yogyakarta berdasarkan Permenkes No. 17 Tahun 2020 dan Keputusan Menteri Kesehatan melalui KMK No. HK.01.07-MENKES-382-2020. Methodology: Penelitian ini merupakan penelitian deskriptif observasional dengan penentuan sampel dalam penelitian menggunakan stratified random sampling, yaitu dipilih berdasarkan kualifikasi pasar rakyat kelas I hingga kelas V yang berada di Kota Yogyakarta dan dibawah pengawasan Dinas Perdagangan Kota Yogyakarta. Pada kelas I direpresentasikan dengan Pasar Beringharjo (bagian timur), kelas II Pasar Giwangan, kelas III Pasar Demangan, kelas IV Pasar Legi Patangpuluhan dan kelas V Pasar Gedong Kuning. Pengambilan data tata kelola sanitasi lingkungan pasar dilakukan pada bulan September – Oktober 2021. Informasi mengenai mekanisme tata kelola sanitasi lingkungan pasar dan deskripsi setiap pasar rakyat dilakukan wawancara dengan pengelola pasar. Penilaian kondisi sanitasi lingkungan pasar rakyat era new normal dilakukan dengan observasi peneliti menggunakan instrumen. Kriteria sanitasi lingkungan pasar rakyat di era new normal dikategorikan pasar sehat apabila skor yang didapat mencapai ≥70% dan dikategorikan pasar tidak sehat apabila skor yang didapat yakni <70%. Result: Hasil penelitian ini adalah terdapat tiga pasar yang memiliki kondisi sanitasi yang sesuai dengan Permenkes mengenai Pasar Sehat dan telah menerapkan protokol kesehatan (Pasar Beringharjo, Pasar Legi Patangpuluhan dan Pasar Gedong Kuning). Namun masih terdapat dua pasar yang masih dalam kategori pasar tidak sehat (Pasar Giwangan dan Pasar Demangan). Selanjutnya terdapat beberapa variabel yang telah diterapkan cukup baik, yaitu air untuk kebutuhan higiene sanitasi, kamar mandi dan toilet pengelolaan sampah, saluran pembuangan air limbah, tempat cuci tangan, kualitas makanan dan bahan pangan, desinfeksi pasar serta kebersihan pasar, sedangkan tata kelola mengenai pengendalian vektor dan binatang pembawa penyakit serta pengadaan IPAL perlu dilakukan peningkatan untuk mendukung mewujudkan pasar sehat di era new normal. Discussion: Pada masa pandemi Covid-19, keberadaan air bersih sangat penting untuk menerapkan protokol kesehatan Covid-19 seperti mencuci tangan, BAK dan BAB, sehingga perlu diperhatikannya kuantitas maupun kualitas air bersih yang tersedia di Pasar. Selanjutnya, untuk fasilitas cuci tangan di area toilet dan kamar mandi, hanya tersedia di Pasar Legi Patangpuluhan. Adanya fasilitas cuci tangan di area toilet dan kamar mandi merupakan salah satu upaya yang dapat dilakukan untuk mencegah pasar menjadi lokasi transmisi virus Covid-19. Kebersihan kamar mandi dan toilet juga perlu diperhatikan saat pandemi Covid-19, seperti kebersihan pada gayung dan gagang pintu. Hal ini dikarenakan pada permukaan yang berbahan plastik dan besi tahan karat virus dapat bertahan hingga 72 jam. Adanya IPAL di pasar rakyat bertujuan untuk

				mencegah terjadinya pencemaran lingkungan sehingga limbah cair yang dihasilkan dari kegiatan pasar ketika disalurkan ke badan air tidak menimbulkan gangguan ekosistem lingkungan. Selanjutnya berdasarkan hasil wawancara peneliti dengan pengelola pasar, fasilitas tempat cuci tangan baru diadakan saat pandemi Covid-19, sebelumnya hanya Pasar Bringhajo Timur yang telah menyediakan fasilitas tempat cuci tangan walaupun dengan jumlah yang terbatas. Pihak pengelola pasar juga belum melakukan upaya pengendalian vektor dan binatang penular penyakit, sehingga tindakan pengendalian hanya sebatas inisiatif dari pedagang yang merasa terganggu dengan keberadaan vektor dan binatang tersebut sehingga membutuhkan upaya pembasmian. Kegiatan desinfeksi dapat mencegahan penularan Covid-19 di area pasar, namun perlu diperhatikan bahwa dalam melakukan kegiatan desinfeksi pasar, petugas kebersihan harus menggunakan APD yang lengkap untuk menghindari paparan bahan kimia ke tubuh serta dilakukan ketika kegiatan pasar sudah tidak beroperasi untuk mengurangi kontak bahan kimia ke warga pasar. Adanya penerapan protokol kesehatan di lingkungan pasar memiliki hubungan dalam peningkatan tata kelola sanitasi di pasar, sehingga hal ini dapat berjalan secara beriringan. Tata Kelola sanitasi yang baik dapat berkontribusi terhadap pencegahan penyebaran Covid-19 di area pasar. Selain rekomendasi untuk mengadakan program pengendalian vektor dan binatang pembawa penyakit serta pengadaan IPAL di pasar rakyat, sosialisasi mengenai PHBS dan penerapan protokol kesehatan untuk mencegah terjadinya Covid-19 di lingkungan pasar perlu dilakukan secara rutin untuk menciptakan pasar sehat di era new normal. Conclusion: Kesimpulan dari penelitian ini adalah terdapat tiga pasar yang memiliki kondisi sanitasi sesuai dengan Permenkes mengenai Pasar Sehat dan telah menerapkan protokol kesehatan. Namun masih terdapat dua pasar yang masih dalam kategori pasar tidak sehat. Kategori sanitasi pasar rakyat yang perlu ditingkatkan untuk mendukung mewujudkan pasar sehat di era new normal adalah tata kelola mengenai pengendalian vektor dan binatang pembawa penyakit serta pengadaan IPAL. Penerapan protokol kesehatan di lingkungan pasar memiliki hubungan dalam peningkatan tata kelola sanitasi di pasar, sehingga hal ini dapat berjalan secara beriringan. Tata kelola sanitasi yang baik dapat berkontribusi terhadap pencegahan penyebaran Covid-19 di area pasar.
5	Arman Nur Ikhsan	Universitas Gadjah Mada		Background: Packaged drinking water (PDW) is one of drinking water option that is widely consumed and growing in recent years. Global PDW consumption is estimated to increase by 513 billion liters in 2025. Meanwhile in Indonesia, the increasing of PDW consumption was happened. The determinant factor of the increasing trend of PDW use in Indonesia was slightly few. The increasing of PDW consumption is not paralleled with the water security. People considered that PDW is the safest source of water. Unsafe and poor quality of water leads to waterborne illnesses e.g. diarrhea, malnutrition and cognitive development. This study aims to analyzes trends of PDW in last two decades and the socio-economic determinant of PDW consumption in Indonesia. Methods: We conducted linier regression to estimate the future PDW consumption in Indonesia and bivariate pearson correlation to reveal the correlation between economic and population growth. We used Data from Indonesian statistic in this analyses. We also conducted logistic regression to find significant socio-economic determinants PDW consumption from Indonesian Demographic Health Survey (IDHS) 2007,2012 and 2017 datasets. Result: This study found that the increasing rate of PDW consumption per year in Indonesia was 1.24% from 2000 to 2020 annually, and 50% of the Indonesian population is predicted to consume PDW in 2026. The increasing use of PDW in Indonesia was significantly associated with the economic growth of the country, i.e., proxied by the gross domestic product and urban population. Logistic regression analysis results that the age of the household head,

				mother's educational level, father's educational level, wealth index, type of residence, regions, and type of toilet facility were significantly associated with the PDW usage. The type of residence, wealth index, and regions were considered to have the largest influence on PDW consumption, i.e., highest β values, in all three dataset comparisons. Discussion/Implications: The analysis revealed that the trend of PDW consumption in Indonesia is strongly correlated with the economic growth level of the country, i.e., proxied by urbanization and GDP levels. We argue that the economic growth of a country indirectly influences one's working time, i.e., increased working time, limits the spare time, and makes them choose a time- and cost-efficient drinking water option, i.e., PDW. Urban households were more likely to consume PDW compared to rural households. Firstly, because the urbanization level increased the accessibility of PDW producers or markets while accessing PDW in rural areas is more difficult due to limited infrastructure. Moreover, there is a tendency of the urban population to consume ready-to-use drinking water, i.e., PDW. Moreover, The increased educational levels of parents may lead to increased beneficial awareness of PDW as the main source of drinking water, e.g., quality, convenience, and affordability. Exposure to mass media does not significantly relate to PDW consumption. The increased PDW consumption in the neighborhood may create a norm, i.e., social pressure of using PDW, which will create a 'reinforcing effect' and rapidly increase the PDW consumption, as discussed in the context of household water treatment (HWT) behavior in developing countries. Another significant variables are Income, educational level, and urban area. Iin combination with this finding with other study findings, we then suggest that young people in urban areas would dominate the PDW consumer in the future. These young people can then be a potential object of intervention in improving PDW safety in Indonesia, e.g., by educating them to always keep their PDW dispensers clean. Conclusion: There is a fast-increasing PDW consumption in Indonesia and 50% of people in Indonesia are expected to consume PDW in 2026. The increasing PDW consumption in Indonesia was strongly associated with the economic growth of the country, which is represented by the GDP and urban population. Regression analysis revealed that socio-economic characteristics, including the age of the household head, mother's educational level, father's educational level, wealth index, type of residence, and type of toilet facility, significantly predict the PDW consumption. Our findings indicate that young people in urban areas may dominate the PDW consumer in the future.
6	I Wayan Koko Suryawan	Universitas Pertamina	Building Community Resilient wi Water Saving Program Preferences	1. Background Green building is a concept of developing environmentally friendly, energy efficient, water efficient, and minimizing th use of existing natural resources while maintaining the function of the building [1] . Applying green buildings can reduc the impact of new buildings on the environment and human health. This concept has many aspects, one of which is wat conservation. Water conservation aims to reduce the use of clean water for daily needs and reduce the generation wastewater produced [2] . Aspects studied in water conservation include using a water meter to determine water us reductionand landscaping water use efficiency. All parties must start implementing the concept of saving water for a purposes, domestic, non-domestic, industrial, and agricultural, to become more resilient. Community resilience is one dimension of vulnerability to various causes of stress and shock, such as disasters ar natural hazards [3] . This impact is partly due to the inherent characteristics of social interactions, institutions, and cultur value systems. The Covid-19 pandemic that has hit since the beginning of 2020 can also be interpreted as a cause social stress in society. People who have been free to move around are currently experiencing limitations caused by th Covid-19 outbreak.

				Seeing the potential risk of vulnerability to water that arises, especially during the current Covid-19 pandemic, it is deeme necessary for a community movement regarding water security. In addition to being effective in water utilization, it als reduces routine costs incurred every month to meet water needs. Therefore, one of the strategies to provide education increase water security in the post- pandemic Covid-19 era is to provide alternatives according to their preference regarding increasing water security through three dimensions of community resilience: action, learning, and resource [4 management. Unfortunately, only a few studies use a resilient community framework, making our study a new finding th can help the efforts of the pillars of sustainable development goal (SDG). Therefore, this study aims to determine th community's preferences in saving water, especially within a resilient community framework. 2. Methodology In this study, we used a random sampling method carried out online. The respondents used was 500 respondents fro Java and Bali. Where the data analysis method used is importance and performance analysis (IPA). IPA is a procedu for showing the relative importance of various attributes and the performance of an organization in determining th underlying attributes. IPA combines measurements on the dimensions of expectations and interests into two grids. The the two dimensions are plotted onto the importance value as the vertical axis while the expectation value is the diagon axis. Then use the average value contained in the dimensions of interest and expectations as the centre of the line cuttin Where the question items in this study can be seen in Table 1. In this study, the probit and logit models also carried o the willingness to participate (WTP) in the water-saving campaign program. 3. Result The results of community preferences in efforts to save water for community resilience can be seen in Figure 1. Agai increasing learning and awareness is the highest community preference, accompanied by not dumping wastewater in water bodies carelessly. Based on the logit and probit models, it is found that people's attitudes toward using tap wat and using rainwater have a significant effect on WTP. While demographic conditions also affect WTP (Table 2). 4. Policy Implications Since the declaration of sustainable development goals, also known as the SDGs, most countries in the world, includir Indonesia, have followed up with various environmentally friendly development policies. In addition, it significant increases the efficiency of water use in all sectors, ensures the use and supply of fresh water sustainable way to addres water scarcity, and significantly reduces the number of people suffering from water scarcity. The efforts can suppo these steps based on their preferences to achieve water security by integrating WTP in quadrant one improvements. 5. Conclusion Community choices for saving water for community resilience include raising learning and awareness and not careless discharging wastewater. In addition, the community's attitudes about utilizing tap water and rainfall affect WTP, a do demographic factors.
7	Annisa Pramesti Putri	SNV Netherlands Development Organisation Indonesia		Latar Belakang dan Pernyataan Masalah 25.67% Pusat Kesehatan Masyarakat (Puskesmas) memiliki layanan sanitasi terbatas[1] di Indonesia, sedangkan di tiga kota program WASH SDG SNV Indonesia lebih dari 80% fasyankes termasuk Puskesmas juga memiliki layanan sanitasi terbatas[2]. Definisi layanan sanitasi terbatas mengacu pada Joint Monitoring Program (JMP), di antaranya adalah tidak adanya toilet terpisah laki-laki dan perempuan, dan antara pasien dengan staff, dan tidak ada toilet khusus

				penyandang disabilitas. Data tersebut juga menunjukkan bahwa aspek kesetaran gender dan inklusi sosial (GESI) masih kurang diperhatikan. Penyediaan sarana dan layanan air, sanitasi, dan kebersihan yang inklusif di Fasilitas Pelayanan Kesehatan (fasyankes) memerlukan akuntabilitas dan ketanggapan yang kuat dari Dinas Kesehatan sebagai institusi pengampu dan manajemen fasyankes. Pelayanan yang tanggap dapat mendorong pemahaman mendalam tentang kebutuhan yang beragam sehingga dapat memenuhui kebutuhan tersebut, sedangkan akuntabilitas dapat mendorong kinerja yang lebih baik. Selain itu, akuntabilitas juga berkontribusi terhadap pelayanan yang berkelanjutan dengan melibatkan pemangku kepentingan dan menyebarkan informasi secara transparan. Metodologi dan Hasil Melalui program WASH SDG, SNV Indonesia melakukan kajian di tahun 2020 untuk melihat kesenjangan antara peraturan yang ada di tingkat global dan nasional dengan praktiknya di tingkat kota. Kami menemukan bahwa peraturan di tingkat nasional dan global sudah tersedia, namun panduan praktik pelaksanaan di tingkat kota belum ada, terutama yang spesifik tentang air, sanitasi, dan kebersihan[3]. Kami melakukan uji coba di 6 puskesmas di Tasikmalaya, Bandar Lampung, dan Metro dengan mengembangkan indikator penilaian untuk peningkatan sarana air, sanitasi, dan kebersihan. Setelah itu, kami menyelaraskan dengan alat WASH FIT dan mengadaptasi beberapa indikator berdasarkan hasil uji coba tersebut bersama puskesmas, termasuk juga menambahkan indikator tentang Manajemen Kebersihan dan Kesehatan Menstruasi (MKM). SNV bersama mitra lokal telah membangun wadah partisipatif sebagai tempat berdiskusi, mendemonstrasikan komitmen yang kuat, serta berbagi informasi secara transparan antara Dinas Kesehatan Kota, puskesmas, dan masyarakat. Diskusi di wadah tersebut menghasilkan rencana tindak lanjut yang disepakati seluruh pihak untuk meningkatkan layanan air, sanitasi, dan kebersihan, yang kemudian dilaksanakan oleh pihak manajemen puskesmas. Hasil penilaian dengan WASH FIT di tahun 2022 menunjukkan bahwa 6 dari total 14 Puskemas yang didampingi telah berupaya menyediakan toilet dengan desain universal (misal: menggunakan kloset duduk, melebarkan pintu masuk toilet agar kursi roda bisa masuk), menyediakan kebutuhan MKM di toilet (misal: pembalut, tisu, dan tempat sampah tertutup), dan menambahkan tangga kecil di sarana Cuci Tangan Pakai Sabun (CTPS) agar bisa dijangkau oleh anak-anak. Di Kota Metro, hasil perbaikan tersebut berhasil mendorong Dinas Kesehatan Kota untuk melakukan replikasi dengan berkomitmen untuk menaikkan alokasi anggaran hingga 30% di tahun 2023. Diskusi dan Rekomendasi Melibatkan dinas pengampu dalam setiap kegiatan pendampingan penting untuk menciptakan rasa kepemilikan dari dinas sehingga bisa paham prioritas untuk replikasi sehingga kemajuan sanitasi bisa berkelanjutan. Kemudian, menyelaraskan dengan visi dan misi kota sehingga bisa mendapat dukungan penuh dari pemerintah kota terutama walikota untuk kedepannya mengalokasikan anggaran untuk replikasi. Selain itu juga dengan adanya arahan dari kepala daerah, akan mampu mendorong pemerintah kota dan jajarannya, serta fasilitas kesehatan untuk meningkatkan kapasitas dan pengetahuan mengenai WASH di fasyankes. Karena pengetahuan dan kesadaran kepala puskesmas penting untuk meningkatkan komitmen dimana wewenang untuk pengaturan pendanaan ada di kepala puskesmas Kesimpulan

				Pendekatan partisipatif penting untuk dilakukan di seluruh tahapan program mulai dari perencanaan, pelaksanaan, pemantauan dan evaluasi, serta penyepakatan rencana tindak lanjut. Harapannya, pendekatan ini dapat mendorong ketanggapan yang lebih baik, pengaturan penyediaan layanan yang kuat, dan peningkatan akses air, sanitasi, dan kebersihan di puskesmas yang adil dan setara.
8	Putri Sortaria	SNV Netherlands Development Organisation Indonesia		Latar Belakang dan Pernyataan Masalah Pemanfaatan materi komunikasi, informasi, dan edukasi (KIE) yang mudah dipahami masyarakat adalah tahap yang penting dalam upaya menciptakan kebutuhan sanitasi aman di Indonesia. Sayangnya, sebagian besar materi KIE yang beredar didasari perencanaan yang terbatas, tidak didahului dengan riset formatif, dan tidak melalui uji coba di tingkat penerima pesan. Idealnya, uij keterbacaan materi KIE perlu dilaksanakan dengan tujuan menciptakan materi yang dapat dibaca dan dimengerti dengan mudah, sesuai dengan konteks sosial budaya setempat, serta diterima oleh masyarakat. Metodologi dan Hasil SNV Indonesia saat ini tengah melaksanakan program WASH SDG di Kota Tasikmalaya, Bandar Lampung, dan Metro, yang salah satu komponennya adalah Komunikasi Perubahan Perilaku (KPP). Sebagai bagian dari komponen ini, di tahun 2022 SNV melaksanakan uji keterbacaan kepada pengguna materi KIE seperti sanitarian dan kader kesehatan, serta kepada penerima pesan yaitu masyarakat, termasuk penyandang disabilitas. Uji keterbacaan dilakukan untuk 10 (sepuluh) materi tertulis dan 1 (satu) video dengan metode diskusi kelompok terfokus yang terdiri dari 5 (lima) hingga 8 (delapan) peserta. Skala Likert digunakan sebagai alat untuk mengukur persepsi masyarakat terhadap setiap materi KIE yang diujicobakan. Aspek yang masuk ke dalam penilaian antara lain: ketertarikan, kelengkapan informasi, penerimaan masyarakat, kesesuaian dengan konteks penerima, ajakan untuk beraksi, aksesibilitas materi, dan saluran penyampaian informasi yang dirujuk oleh masyarakat penerima. Uji coba KIE dilakukan salah satunya agar para promotor perilaku kesehatan termasuk sanitasi aman paham pentingnya penggunaan materi KIE yang baik untuk memastikan pesan kunci dapat tersampaikan dan terjadi perubahan perilaku. Untuk mendukung hal tersebut, hasil uji coba menunjukkan bahwa masyarakat lebih tertarik pada materi KIE yang memiliki banyak gambar berwarna-warni daripada teks yang mengandung banyak informasi. Kemudian, ketersediaan nomor yang bisa dihubungi saat dibutuhkan, seperti tukang tangki septik atau sedot WC, sangat penting dicantumkan agar masyarakat dapat langsung beraksi terhadap pesan yang disampaikan. Selain itu, kita dapat mengombinasikan format audio dan visual untuk meningkatkan aksesibilitas dan menyesuaikan dengan kebutuhan masyarakat yang beragam. Selain itu, penyebaran informasi dengan materi KIE juga dapat disebarkan melalui berbagai kanal atau saluran informasi yang sesuai, tidak hanya dengan sosialisasi tatap muka langsung, tapi juga dapat melalui papan informasi cetak di lokasi tertentu dan juga sosial media. Diskusi dan Rekomendasi Dalam melakukan uji keterbacaan KIE, sangat baik apabila melibatkan serta para pelaku promosi kesehatan dan kader mulai dari perencanaan hingga pelaksanaan. Hal ini dapat menghasilkan materi KIE yang tepat sasaran berdasarkan motivator yang sesuai di lokasi target, dan juga dapat disesuaikan dengan konteks masyarakat agar penerimaan baik oleh masyarakat. Dengan demikian potensi untuk pesan perubahan diterima masyarakat lebih tinggi dan potensi terjadinya perubahan perilaku di masyarakat juga lebih tinggi.

				Kemudian, dengan melibatkan kelompok rentan dalam uji keterbacaan serta mendapatkan langsung masukan dan persepsi dari apa yang benar-benar dibutuhkan oleh mereka, maka pesan perubahan yang dikembangkan dapat diterima oleh kelompok rentan. Kesimpulan Temuan dari uji keterbacaan di atas penting untuk dipertimbangkan oleh promotor, baik sanitarian, kader, maupun penyampai pesan lainnya supaya masyarakat dapat tertarik, memahami, serta menerjemahkan pesan menjadi aksi. Tidak hanya itu, pemahaman akan konteks sosial budaya masyarakat setempat juga krusial perannya terhadap penerimaan pesan dan aksi perubahan perilaku oleh masyarakat penerima menuju sanitasi aman
9	Corie Indria Prasasti & Ayu Siantoro	Universitas Airlangga & Wahana Visi Indonesia	Safe Child Feces and Diaper Disposal Behavior Change Determinants in Rural Sekadau, West Kalimantan, and Urban Surabaya, East Java	People tend to think that toddler feces are harmless, allowing children to defecate in the open. They are also more likely to throw disposable diapers containing feces carelessly to the trash container, open field, or even river without cleaning the feces first. Meanwhile, cloth diapers were washed on the bathroom floor or public laundry where the feces are disposed of into an open drain for dirty water. According to the 2018 Indonesian Basic Health Research (Riskesdas) by the Ministry of Health, the proportion of unsafe child feces and diaper disposal is 33% in rural communities and 34% in urban communities. Improperly handled used diapers attract stray animals and fly infestation. Those cause harmful bacteria in feces to spread and increase the risk of disease in children, mainly diarrhea. Moreover, even though the house has a toilet, if they do not dispose of a toddler's feces and diaper safely, the family should be considered open defecating (OD). Unsafe child feces and diaper disposal contributes to an unhealthy environment, such as polluting drinking water sources with feces and wastes. Disposable diapers contain chemicals and plastic as the main ingredients. Plastic pollutes the environment as they are difficult to decompose naturally, so they need to be separated from other solid waste, especially organic waste such as feces. Proper handling is needed to safely dispose of used diapers containing both plastic and organic materials. This can be done by separating or cleaning the feces in the diapers into the toilet hole or burying them, then throwing the cleaned used diapers into a separate trash container. Using adaptations of Health-Belief Model and Theory of Planned Behavior, this research aims to investigate determinants of the safe child feces and diaper disposal behavior change described in the former sentence by parents or caregivers of toddlers in rural and urban areas. This research consisted of two studies, a quantitative survey and a qualitative focus group discussion (FGD). The dependent variable of this research is toddler feces and diapers disposal behavior. The independent variables are 1) community characteristics (age, gender, occupation, education), 2) home environment conditions, 3) knowledge, 4) perceptions (perceived severity/seriousness, perceived susceptibility, perceived benefits, perceived barriers, cues to actions, social norms, and self-esteem), and 5) preferred intervention strategies as the independent variables. The household survey involved 508 respondents from Wahana Visi Indonesia ministry areas in five rural villages (desa) in 2 sub-districts (Nanga Taman and Sekadau Hilir) of Sekadau Regency, West Kalimantan (n = 257) and five urban villages (kelurahan) in 2 sub-districts (Simokerto and Kenjeran) of Surabaya City, East Java (n = 251). The majority of respondents are young mothers (20-30s years old) who are housewives with elementary to secondary education and below 5 million rupiahs household income. The household respondents were selected using purposive sampling with having toddlers as the main criteria. Exploratory factor analysis, path analysis, and regression were conducted for the quantitative data.

				Furthermore, eleven FGD sessions were also conducted in the two study areas, five in rural Sekadau and six in urban Surabaya. Four FGD sessions involve toddlers' parents or main caregivers (mostly mothers) as the priority group to perform the behavior change. Seven FGD sessions involve groups who can influence the priority group on whether to perform the expected behavior, which are family members (e.g., husbands or the toddler's fathers); health cadres and healthcare professionals; faith, custom, and community leaders; and government health offices representatives. Thematic analysis was employed for the qualitative data. Survey results showed that unsafe child feces and diaper disposal reached 63.43% in Sekadau, and 51% in Surabaya. This happened even though access to 24-hour clean water in Sekadau reached 94.16% and 95.22% in Surabaya. Respondents in both study locations above have more than 90% access to sanitation. However, 99% of Sekadau respondents have no access to waste management, while 92% of Surabayans have it. Perceived severity/seriousness are significant determinants in both urban and rural locations, showing that parents/caregivers would be more likely to perform safe child feces and diaper disposal if they believe the severity/seriousness of health risks caused by improper toddlers' feces and diaper handling. As perceived barriers are also significant, parents/caregivers would be more motivated to dispose of child feces and diaper disposal safely if the barriers are minimized (e.g., reducing household chores). Yet, it was social norms and myths (e.g., throwing used diapers into the river to avoid suleten skin disease in toddlers) found to be more potent in Sekadau and Surabaya. The effects of community and government norms appeared to be stronger in Sekadau, while social norms in family and neighborhood are more influential in Surabaya. While the survey indicated that parents/caregivers' knowledge regarding safe child feces and diaper disposal is sufficient, FGD participants, especially in Sekadau, expressed the need for clearer socialization and firmer regulations. In both study locations, programs and regulations governing child feces and diaper disposal are indeed lacking. The only policy is regarding household waste management, mostly in urban areas. In fact, waste management facilities are rarely available in rural areas. Furthermore, healthcare workers, health cadres, and waste management officers still need specific information and technical knowledge regarding safe and healthy management of disposable diaper waste. Participants also stated that media and methods of delivering behavior change communications are less innovative. Multisectoral actors, including the disposable diapers industry and mass media, need to be involved in behavior change intervention.
10	Mita Sirait	Wahana Visi Indonesia	Assessing Child Feces Disposal Management Practices in Indonesia with Integrated Behavior Model WASH	Indonesia Health Profile describes that in 2020, the main cause of under-five (U5) mortality in Indonesia is infection 3.4% (age 10-28 days), diarrhea 19% (age 29 days - 59 months), and a total of 3,953,716 diarrhea incidence reported in health facilities. In addition to causing death, chronic diarrhea is one of the factors that causes stunting in U5 children, which is also found at a high rate, 30.8% in Indonesian toddlers (Riskesdas, 2018). Diarrhea is a digestive tract infection caused by an unhealthy environment and unhygienic behavior. A lot of research has proven that diarrhea is preventable through Water, Sanitation and Hygiene (WASH) interventions. Studies show evidence of a strong association between child feces disposal and diarrhea, yet no systematic interventions have been designed or implemented to address this problem in the WASH and Health programs in Indonesia. Wahana Visi Indonesia conducted formative research in Sekadau and Simokerto to gain a more comprehensive understanding of the Child Feces Disposal Management (CFDM) practice and behavior. The study aims at assessing child feces disposal management practices in a rural and urban context with an Integrated Behavior

				Model (IBM) WASH approach that considers contextual, psychosocial/software, product/technology hardware at five levels: societal/structural, community, interpersonal/household, individual, habitual. The result is then based on developing a systematic intervention strategy. The result shows that the majority of respondents were housewives, aged 26-35 years old, biological parents of U5 children, and only had one U5 child in their household. Child sex was balanced in composition; males in Sekadau (51.36%) and females in Simokerto (51.79%). The highest percentage of children's age was more than 36 months (Sekadau 30.74%, Simokerto 34.63%) followed by 7-24 months (Sekadau 28.40%, Simokerto 28.40%). In the last 30 days, it was found that the children had diarrhea (Sekadau 13.23%, Simokerto 5.98%), and other WASH related diseases and diaper skin rushes. Respondents were dwelling with 24 hours access to water (Sekadau 94.16%, Simokerto 95.22%), and having access to latrine at home (Sekadau 93%, Simokerto 97.21%) with pour-flush squat toilet type (Sekadau 85.35%, Simokerto 91.8%), with pit containment model in Sekadau (75.49%), and septic tank containment in Simokerto (94.02%). Children defecating in the toilet was found better in Sekadau (50.97%) than in Simokerto (39.04%) and defecating in the diaper was found lower in Sekadau (42.8%) than in Simokerto (60.16%). Feces in the diaper were then disposed of in the toilet (Sekadau 36,5%, Simokerto 49%), and remained in the diaper to be disposed of in the trash bin (Sekadau 38.13%, Simokerto 45.82). IBM WASH analysis shows that Simokerto, as an urban context, has more access to a variety of CFDM tools and supplies, such as reusable waterproof baby and napkin, reusable waterproof pants, baby potty, child toilet seat than those of the rural, yet lack of Social Behavior Change activities and materials on CFDM including potty training are found in both Sekadau and Simokerto areas. Exploring local equipment and technology to support proper CFDM in Sekadau as a rural context is needed. Child safety, child health and saving money are considered the highest motivators to improve child feces management practices. Thus, promoting traditional knowledge in helping child U5 transition from open defecation to using toilets safely is necessary. Perceptions that driving the CFDM behavior is not significantly different in urban and urban context, however, the social norms interventions may work better in Sekadau than in Simokerto because the community bond is higher in Sekadau. A high gap is found at structural level in both contexts where none of the institutions have existing programs or activities related to child feces management. It is recommended to include CFDM not only in the existing national sanitation program in all three components: Demand, Supply and Enabling Environment, but also in the Mother and Child Health program.
11	Mita Sirait, Asi Lusia, Sherly Vantono	Wahana Visi Indonesia	WASH Access or Behavior? Which one contributes to children under 5 years old's nutritional status? A situational analysis for Children are Well Nourished Technical Program in 15 Districts in Indonesia.	Stunted is still a problem in Indonesia. The prevalence of stunted in Indonesia has indeed decreased to 24.4% based on the results of the Indonesia Nutrition Status Survey (SSGI) in 2021 compared to the results of the 2018 Basic Health Research, which was 30.8%. However, although the prevalence of stunted has decreased nationally, the prevalence of stunted in Indonesia is still varied. There are still districts/cities with a high and very high stunted prevalence in Indonesia. The variation in stunted prevalence in Indonesia is most likely related to the size of Indonesia's territory. A country with 38 provinces and 514 districts/cities having different regional characteristics, demography, economic level, regional topography, customs, education level, etc. Coupled with the gap between rural and urban areas, which is also still a classic problem in Indonesia. With these differences in characteristics, any program to address stunting issues in Indonesia will obviously be a challenging intervention.

				The Indonesian government has set a reduction in stunted prevalence to 14% by 2024. To that end, several strategies have also been set up by the Indonesian government as stated in the National Strategy for the Acceleration of Stunted Prevention 2018-2024. In line with that, Wahana Visi Indonesia (WVI) has also set a country's strategic direction for 2021-2025 where one of the priorities is improving the nutritional status of children aged 0-5 years with intervention known as the Children are Well Nourished Technical Program (CWN TP). It aims to improve feeding and caring practices for families with 0-59.99 month-old children, improve food security among families, and improve disease prevention for children, families, and communities by employing Positive Deviance Hearth (PDH)+ project model, Integrated Water Sanitation & Hygiene (WASH) project model, Saving for Transformation (S4T) project model, and Citizen Voice and Action (CVA) project model. WVI conducted a baseline to determine the initial state of the area prior to the CWN TP implementation in 13 Area Programs (AP) in 15 districts and 5 provinces and 4 zones (West Kalimantan, NTT - Flores, NTT Bamora, Sambawa). The locations were Nias Selatan, Bengkulu Selatan, Simokerto, Ende, Manggarai Barat, Manggarai, Manggarai Timur, Nagekeo, Ngada, Sumba Barat Daya, Kupang, Timor Tengah Selatan, Melawi, Sintang and Sekadau. The objective of the study was to gain situational analysis that focused on WASH and nutritional status for setting up standard indicators and priority intervention. The study employed 30 clusters x 7 households (HH) survey using cross sectional design study. The respondents were caregivers who had under five children. It used the probability proportional to size (PPS) method as a sampling method to determine the 30 clusters. The total number of samples in this study was 5,250, the number of samples taken from each AP was 210. The data was analysed descriptively at national level and disaggregated by sex, zone and AP. Data analysis was done using SPSS, Microsoft Excel, and Power BI. The result shows that there were 2.965 children under five involved in this study (female=49.83%; male=50.17%). Most of them were aged 24-59.9 months (63.73%). The prevalence of stunted growth was very high at 43.2% (CI: 41.32% - 45.2%); then wasted at 16.40% (CI: 15.01% - 17.9%) and underweight at 28.30% (26.56% - 30.06%). The prevalence of stunted, wasted, and underweight was higher in boys than in girls. The prevalence of diarrhoea in children under 5 years at the national level was 8.3% (CI: 7.36% - 9.51%) with 55% were boys and 45% were girls. This value was lower than the results of SSGI 2021 (9.8%). The highest prevalence of diarrhoea was in the Sambawa zone (14.8%) which was higher than SSGI 2021(9.8%). The result also found that stunted in Sambawa was also high. A spatial study in Sumatra found that stunted had a spatial correlation with open defecation free (ODF) and correct hand washing but not diarrhea3. The proportion of households using a basic sanitation facility in 13 APs was 42.7% and using a basic drinking water facility was 57%. This percentage was still lower than the SSGI 2021 results, where the percentage of the population with proper sanitation was 81.9% and drinking water facilities was 66.3%. The percentages of these two indicators were consistently low in the NTT- Bamora zone. NTT is an area that has difficult access to safe water in many areas within the region. The results of Indonesia Basic Health Research 2018 illustrated that NTT was the province with the most difficulty accessing water in Indonesia, which is 13.81%. This figure was very high when compared to the proportion of water access difficulties in Indonesia of 2%. This water shortage will inevitably have an impact on access to proper sanitation. The percentage of correct handwashing at national level was 46%. It was below the Basic Health Research 2018 (49.8%) result. The highest percentage of parents who wash their hands properly was in the NTT-Flores zone (58.9%) and the lowest was in NTT-Bamora (14.8%). The proportion of HH practicing safe household drinking water at national level was 49.57% (CI: 47.69% -51.45%), only 20.21% (CI: 18.73% - 21.75%) of

				households have effective options for solid waste treatment, and was only 25.9% (24.24% - 27.54%) of HH doing wastewater management. Deeper analysis shows that there was no relationship found between WASH access and diarrhea, except with safe drinking water management (p-0.015; OR 1.7). Interestingly, there has been found a correlation between stunting with boiling water for drinking water (p=-0.001 OR 2.1), and with hand washing with soap (p=0.002 OR 0.7). Also, the relationship between open defecation with wasting (P=0.005) and underweight (P=0.014). Given the high prevalence of stunted, wasted, and underweight in all assisted areas, it is recommended to not only focus on improving WASH access but also giving attention to improving WASH behaviors. Although each area has a different magnitude of the WASH problem, and resolving one determinant will not necessarily solve the nutrition status problems in the community, however, it will enable a healthy environment for all.
12	Wigke Capri	Universitas Gadjah Mada	The impact of COVID-19 on women's access to water, sanitation, and hygiene in an Indonesian fishing village	Introduction This project sought to document the impacts of and response to the COVID-19 pandemic in Tambak Lorok, an urban fishing village on the coast of Central Java, Indonesia. In particular, the perspectives of women residents were prioritised to better understand the relationship between the pandemic, access to water, sanitation and hygiene (WASH) and changes in gender roles. Several of the negative health, economic and social impacts of poor access to WASH, for example the burden of water collection; health consequences of lack of access to sanitation facilities and the increased risk of infection in health care facilities, are borne dispropritonately by women (Grant, Huggett et al. 2016). There is also increasing evidence that suggests that women are dispropritonately affected by the health, economic and social impacts of the COVID-19 pandemic (Al-Ali 2020, Azcona, Bhatt et al. 2020, Chang 2020). This includes increased violence against women, less access to sexual and reproductive health and decreased livelihoods for women who are overrpresented in the informal sector. Furthermore, women are bearing additional household burdens (for example childcare, cleaning, cooking, shopping and home-schooling) (United Nations 2020). Many of these additional household burdens are WASH-related given that hand hygiene is one of the most important strategies for preventing the spread of coronaviruses and extra water is needed for cleaning surfaces and clothing ((World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) 2020). Consequently, organisations such as UN Women have called for more data about the impacts of the pandemic to support the development and implementation of gender-responsive policies globally (Azcona, Bhatt et al. 2020 p3). This study focused on the experiences of women in Tambak Lorok: the largest urban fishing village in Semarang City which is on the north coast of Central Java, Indonesia (Astuti and Handayani 2020). As with other coastal areas in Semarang, Tambak Lorok experiences high tides (locally referred to as rob) which lead to flooding of houses, roads and public transport systems as well as overwhelms local drainage systems (Ley 2020) and access to safely managed WASH is generally poor (Ley 2020). Methods The research methods included a desktop analysis of online media relating to the pandemic and WASH from March to October 2020; participatory visual data creation and phone interviews with women residing in Tambak Lorok; and interviews with representatives of key institutions and organisations operating in Tambak Lorok. Two webinars were conducted to share and receive feedback about the initial findings: one with the female participants and another with

				representatives of key institutions together with some of the female participants. This last webinar was an important opportunity to bring residents together with policy makers to support the process of building trust, transparency and sharing information with key stakeholders from Tambak Lorok. Findings Overall, the findings suggest that the pandemic has impacted residents' access to WASH to varying degrees and that the impacts of the pandemic are experienced by women and men differently. Prior to the pandemic, 62-percent of the partcipants' households bought water gallons for drinking (higher quality than other available sources) but due to income losses this dropped to 40-percent during the pandemic. There did not seem to be any indication that access to sanitation had changed substantially since the beginning of the pandemic. However, several participants noted that cleanliness had become more important during the pandemic than previously. Therefore, the inability to clean their toilets properly and the backwash of faeces from a lack of septic tanks (only 50-percent coverage in Tambak Lorok) and open defecation (due to the coastal flooding) was more concerning than usual. Access to hygiene has improved since the pandemic because there are now handwashing stations in front of most houses. Of the participants, 75-percent reported that they (women) were responsible for all of the housework. Whilst this allocation of roles did not change during the pandemic, several participants reported that the amount of housework increased during the pandemic despite their husbands working less. For example, several women reported that the pandemic-specific tasks of keeping children at home, home-schooling and washing masks and clothes fell mostly to them. The findings also suggested that women were more responsible for health promotion and generating extra income when their husbands' work decreased. Conclusion Despite the impacts of the pandemic on the women participants' lives, the main challenge they identified was still rob, the daily coastal flooding that brings water into their houses, spreads faeces (due to open defecation and inadequate sewerage) and leads to infections. Even in the context of the pandemic, their main request of policy makers was to manage the coastal flooding and to do this in consultation with multiple stakeholders and in conjunction with other planned activities such as the Community-Based Total Sanitation (STBM) program.
13	Fitrah Ramadhan	Edukasi Bumi Indonesia		Climate change has brought many externalities to the community, one of its notable impacts is closely related with clean water crisis. With the extreme weather that has happened more frequently along with the low quality of community's social behavior in managing their water stock, clean water is not tended to be optimally managed for fulfilling the basic needs. If this problem is ignored for a long time, it can hinder the improvement of life's quality in the affected area. Considering this urgency, reducing the social vulnerability to clean water crisis because of climate change is a mandatory task for the involved stakeholders. As for first step to realize this strategy, social vulnerability assessment should be conducted as the preliminary study. Thus, the purpose of this study is to conduct the social vulnerability assessment in regards to clean water crisis. As for the study cases, this study would take Baleendah and Dayeuhkolot Districts, Bandung Regency as the sample because these places have been well-known as the high populated area that are prone to flood and drought when the extreme weather is happened. To operate the assessment, mixed-method between quantitative and qualitative approach would be used in the village level unit to measure the level of social vulnerability as well as to deepen the logical reasons behind the achieved indexes. The quantitative method may be functioned for measuring the social vulnerability. Operationally, composite social vulnerability

				assessment framework along with its parameters and indicators should act as a guide in the assessment process. To make it more holistic, the index measurement is assisted by the use of Geographical Information Systems so that the index's pattern could be spatially identified. After finding the social vulnerability indexes for each district, qualitative approach is conducted to elaborate the root problems behind the indexes and synthesize the resilience strategy based on the findings. SWOT analysis is intended to be the method to deconstruct and map the knowledges from the indexes and form strategic solutions. Based on the analysis, there are 24 indicators within 4 components that have been measured jointly in order to produce composite social vulnerability indexes in every village in these two districts. After calculating the indexes, there are similar patterns that can be found between the two districts. The spatial distribution of "vulnerable" indexes in each district are relatively centralized along commercial roads, especially Dayeuhkolot commercial road. The major factor for this result is because of the ignorance of the local people to build and maintain their unstructured store. They will open their temporary or permanent tenant right on the watershed and water catchment area for the sake of securing their marketplace. They are willing to against the government's relocation plan because they are afraid of losing the consumers and profit from their current business. From this description, it can be concluded that local people's economical security must be fulfilled first in order to save the vital zone for clean water saving while educating them about how to increase their capacity in managing the clean water crisis from flood and drought disaster is also simultaneously endeavored. Nevertheless, the mentioned strategies to increase social capacity should be accompanied by other aspect, particularly physical resilience so the impact of extreme weather could be completely mitigated.
14	Mardiana Dwi Puspitasari	Badan Riset dan Inovasi Nasional (BRIN)	Progress in Drinking Water Wells among Households in Indonesia: Impact of Population Density	Introduction Contaminated food or water with human or animal feces contribute to the spread of diarrhea disease. This contamination could occur as a result of poor sanitation 1 and insufficient drinking water source protection. According to the Indonesia Basic Health Research (RISKESDAS), the prevalence of diarrhea disease slightly increased from 7% in 2013 to 8% in 2018. Furthermore, the 2017 Indonesia Demographic and Health Survey (IDHS) showed that only 67 percent of Indonesian households had access to drinking water well that was at least 7 meters away from the nearest septic tank. Back then, the distance between the well and the septic tank was critical because improved sanitation required consideration of all potential sources of drinking water contamination 2–5 . Previous research found that population density was a significant predictor of well contamination 6–8 , despite the fact that other studies confirmed that improved septic tanks could prevent fecal pollution in high-density areas 5,7 . Indonesia's crude population density continued to rise, reaching 142/km in 2021 9 . Furthermore, Indonesia must address the issue of unequal population distribution. In 2015, the island of Java, which accounted for only about 7% of Indonesia's land area, was home to approximately 57 percent of the Indonesian population, with the remaining 43 percent living outside of Java-island 10 . Identifying sanitation trends in densely populated areas will become increasingly important as the population grows. The study will then look at sanitation progress at the household level and identify factors influencing it. Methods The IDHS data were used in this study. The unit of analysis is a household that used drinking water wells and answered questions about the distance between the wells and the nearest septic tank. IDHS 2017 recorded 17,424 households, IDHS 2012 recorded 16,457 households, and IDHS 2017 recorded 16,815 households, respectively. Missing data was

				omitted. The outcome variable is the distance from the well to the nearest septic tank, which is divided into two categories: less than 7 meters and 7 meters or more. Household demographics included wealth index (poor-middle, rich), education level of the head of household (primary, secondary, high), number of members of the household (≤5, &>5), geography (Java-Bali, outer Java Bali), and type of residence (rural, urban). The descriptive analysis was used to examine the household characteristics in each survey wave. Binary logistic regression was used to examine the relationship between explanatory variables and outcome variables, which reported an adjusted odds ratio in each wave. The svyset command was used in STATA 17. Results Table 3 revealed that households in Java-Bali were more likely than those outside of Java-Bali to have a well less than 7 meters from the nearest septic tank (range AOR: 1.24- 1.37). Furthermore, those who lived in urban were at a higher risk than those who lived in rural areas (range AOR: 1.28-1.46). During the three waves, heads of households with a higher education consistently have a lower risk (range AOR: 0.65-0.78). Between 2007 and 2012, household wealth had no significant association with the distance between wells and the nearest septic tank. However, in 2017, rich households had a lower risk than middle and lower-income households (AOR: 0.88). Discussion During the ten-year period, the proportion of households accessing drinking water wells at least 7 meters from the nearest septic tank increased slightly, rising from around 60 percent in 2007 to 63 percent in 2012, then gradually increasing to 67 percent in 2017. However, the findings confirm that households in densely populated areas, either in urban or in the Java-Bali islands, were less likely to have a drinking water well at least 7 meters away from the nearest septic tank. Furthermore, in the previous 5 years, the wealth index was not a significant predictor of households with improved drinking water wells. However, in 2017, poor and middle-income households became less likely to have access to improved drinking water 11,12 . At the current rate of population growth and inclined population density, access to improved drinking water wells may be difficult for poorer and middle-income households. From 2007 to 2017, after controlling for other predictors, the level of education of the household head was a consistent significant predictor of access to improved drinking water wells. This finding highlighted the importance of education in comprehending the need for a distance between the drinking water well and the septic tank 13 . Because poor sanitation and high population density in combination posed a threat to health 14 , efforts such as providing improved sanitation and health services should be directed toward poorer and middle-income households 15 . Conclusion Population density was associated with fewer households having access to drinking water wells located 7 meters or more from the nearest septic-tank. At the current rate of population growth and inclined population density, poorer and middle-income households were less likely to have access to this improved drinking water well. Improved sanitation and health care services must be made available to low- and middle-income households.
15	Riza Fatma Arifa	Badan Riset dan Inovasi Nasional (BRIN)	WASH Access and RTI Symptoms Across Life Stage among Indonesian Ever-Married Women	Introduction Reproductive tract infections (RTIs) were one of the health concerns for women of reproductive age. RTIs were communicable diseases that included sexual transmitted infections (STIs), endogenous infections caused by

				organism overgrowth in the genital tract, and iatrogenic infections caused by medical procedures such as unsafe abortion and insufficient family planning services 1 . RTI symptoms, such as abnormal vaginal discharge, could thus be caused by either a sexual or a hygiene-related disease, or both. Furthermore, RTIs were more common during certain stages of a woman's reproductive life-cycle, such as menstruation 2,3 , union 4 , pregnancy 5–7 , and delivery 6,7. Previous studies found that RTIs were common in developing countries with poor sanitation coverage 8–10 . On the contrary, in 2021, the percentage of Indonesian households with improved sanitation was approximately 80.29 percent 11 . Furthermore, in 2019, about 84.91 percent of Indonesian households with the 40 percent lowest expenditure had access to clean drinking water 12 . Due to their reproductive cycles in their life stage, women required access to clean water, sanitation, and hygiene (WASH) practices 8–10,13 . Aside from the high sanitation and clean water coverage in Indonesia, it was necessary to examine the impact of WASH practice on RTI symptoms at various life stage. The purpose of this study was to see how the association between WASH practices and self-reported RTI symptoms varied across life stage among Indonesian ever married women. Methods This study used data from the 2017 Indonesian Demographic and Health Survey (IDHS). The unit of analysis was ever-married women between the ages of 15 and 49. Sexually transmitted infections (STIs) or symptoms were the outcome variable. The prevalence of RTI was determined among women who had a STI, or abnormal genital discharge, or a genital sore or ulcer, or all in the 12 months preceding the survey 14 . Individual characteristics included education level (primary, secondary, and higher) and life stage (pregnant, married/living together, widowed/divorced). Additionally, drinking water (improved water, bottled and refilled water, or unimproved water), time to get drinking water (< 30 minutes, ≥ 30 minutes), nondrinking water (improved water, unimproved water), type of toilet facility (improved toilet, unimproved toilet), and presence of water and sanitizer at the hand washing place (water and soap, water and sanitizer other than soap, water only, or other) were considered. Descriptive statistics were presented using frequency and weighted proportion 14 . The chi-squared p value was used to determine the relationship between having STIs or symptoms in each factor. The logistic regression method was used to determine the relationship between women's characteristics and the risk of having STIs or other symptoms. All processes were carried out with complex sample weighting using STATA version 17.0. Results Chi-squared analysis showed that the correlation between WASH practice and each life stage was negligible (table 2). Multivariate logistic regression (table 3) revealed that women who were married/living together or widowed/divorced were less likely than pregnant women to experience STIs or symptoms (AOR married=0.68; AORwidowed/divorced=0.58). Women with a higher education had a lower risk of having STIs or symptoms (AOR=0.77) than women with a primary education. Women who used improved nondrinking water had a lower risk of STIs or symptoms than those with unimproved one (AOR=0.8). Furthermore, women group who used water only or others in handwashing facilities were more likely to have STIs than women who used soap and water (AOR=1.19). Women who used bottled and refilled water more likely to have STIs than women used unimproved drinking water (AOR=1.54). Despite a weak significant correlation and a predictable pattern, women who use improved toilets have a lower risk of STIs than women who use unimproved toilets (AOR=0.9).

				Discussion Bacterial vaginosis was an endogenous infection caused by an overgrowth of normal vaginal bacteria 15 . Clinically, bacterial vaginosis manifested as abnormal vaginal discharge 15 . Findings showed that access to clean water and sanitation is critical for ever-married women of reproductive age in Indonesia. Abnormal vaginal discharge was less common in women who had daily access to clean water for vaginal and anal cleansing. Hand-washing with soap and water was also required to maintain hygiene behaviors. Women who had access to bottled and refilled water were more likely to experience abnormal vaginal discharge. In some parts of Indonesia, contaminated bottled and refilled water was observed 16 . Abnormal vaginal discharge was reduced in women who had access to better toilet facilities 17 , although the significance was weak. Thus, a lack of access to improved water supply, sanitation, and hygiene practices resulted in RTI symptoms. The findings revealed that WASH practice did not differ between women's life stages. However, after adjusting with WASH practice and educational attainment, life stages were associated with RTI symptoms. Thus, there is an association between WASH practices and RTI symptoms across all life stages. Pregnant women were the most vulnerable to RTI symptoms. Widowed or divorced women were the least likely to experience RTI symptoms. It was assumed that widowed/divorced women did not engage in sexual activity, so they were less likely to develop STIs that manifested as abnormal vaginal discharge. Sexual contact could spread the bacteria among individuals, eventually disrupting the natural balance of bacterial flora in the vagina 15 . Women with a higher level of education were the least likely to experience RTI symptoms. As a result, this finding recognized the importance of education in lowering the risk of self-reported RTI symptoms 18,19 . Conclusion Across the reproductive life cycle, WASH practice was associated with RTI symptoms. Pregnant women were the most likely to experience abnormal vaginal discharge due to hormonal imbalance. Education for women was required to reduce the risk of RTI symptoms.
16	Franziska Genter	University of Technology Sydney	Understanding household self-supply use and management in urban Indonesia	Background/knowledge gap, problem statement, objective In urban Indonesia, 40 million people rely on groundwater self-supply, however the role of self- supply in securing household water provision remains unexplored. Household self-supply refers to an on-premises water supply relying on groundwater or rainwater, that is privately owned, financed and managed by individual households. Understanding the reliance of households on self-supply and its associated management is crucial to developing appropriate strategies to ensure safe and reliable drinking water services for households in urban Indonesia. The study sought to understand (i) the use and non-use of self-supply water services and alternative water choices and (ii) how self-supply is managed by individual households, including intra-household gender dynamics. Methodology This study used a mixed-methods approach to understand the use and management of household self- supply in the Indonesian cities of Bekasi and Metro, where a high proportion of households rely on private wells for water supply. Data for the quantitative approach were collected from 300 randomly selected households in both Bekasi (February-March 2020) and Metro (October-November 2020). The quantitative approach included a household survey that covered a range of themes about the household, water sources used and perceptions of water service attributes. Following descriptive analysis of the household survey, 24 in-depth interviews were carried out by phone from 12 purposively selected households in Bekasi (December 2020) and Metro (August 2021 and November 2021-January

				2022), respectively. The in-depth interviews covered themes on water choice, perception, management and decision-making. Results Self-supply was the preferred drinking water source because of its perceived safety, taste and appearance at both study sites. The most important attributes influencing choice of domestic water source were appearance, reliability and safety in Bekasi, and safety followed by convenience and reliability in Metro. Coping strategies to overcome quality and availability problems of self-supply included water treatment, switching from dug wells to deeper boreholes and the use of multiple water sources. All households reported boiling self-supplied water, however, the labor involved was tiring for some households, leading them to resort to alternative water sources. Reasons for non-use of alternative water sources such as refill water and public piped systems included a lack of trust in water quality and perceived poor taste. Regarding self-supply management, responsibilities and decision- making varied across households, but cooperation between men and women concerning workload was common. In both study sites women were mostly responsible for household water management, and men were mostly responsible for maintenance and repairs, cleanliness of the water source and financing. Discussion/Policy Implications To support and regulate self-supply towards a safely managed water service, strategies for improvements should be considered not only at the source, but also at point-of-use, including promotion of safe household water treatment and management. Although self-supply was the main source of water at these study sites, alternative water sources such as refill water and public piped systems played an important role in supplementing inadequate supplies, and hence their safety and reliability should also be considered when establishing support strategies. Conclusion This study provided important insights into the use and management of self-supply in urban Indonesia. An improved understanding of how and why urban households self-supply their water is crucial for accelerating progress towards Sustainable Development Goal 6.1 in Indonesia. A mixed-methods approach was used, which allowed for more comprehensive findings and provided both broader and deeper insights into the use and management of self-supply than a purely quantitative or qualitative approach. This study found that households in Bekasi and Metro generally preferred groundwater self-supply water, but still used alternative water sources to supplement inadequate supply. Some considerations to support and regulate self-supply towards a safely managed water service can be concluded from this study: (i) self-supply use was connected with water boiling, which increased water quality at the point-of-use but came with an additional workload for household members and the potential use of fuel which is harmful to health; (ii) in response to groundwater availability issues, households that could afford it often switched from shallow dug wells to deeper wells with a motorized pump; (iii) there was little trust in quality of alternative water sources such as refill water and public piped systems; (iv) gendered intra-household dynamics varied across households, but showed cooperation between women and men and certain clearly defined roles in terms of responsibilities and decision-making.
17	Aptu Andy Kurniawan	Dinas PU Sumber Daya Air Kabupaten Malang	SUSTAINABILITY STATUS ANALYSIS OF WOMEN'S	Background This study examines the status and sustainability of women's participation in the IUWASH Plus program in Malang Regency. This research is expected to be a reference for increasing women's participation in the iuwash plus program

			PARTICIPATION IN THE IUWASH PLUS Program In Malang Regency	in Malang regency are more prosperous by managing sensitive attributes that affect the dimensions of women's participation. Methodology Data Collection Method This study uses a survey method. The data collected is in the form of primary and secondary data. The primary data collection method was conducted through structured interviews with respondents using a closed questionnaire. Respondents were assigned randomly as many as 30 people at each research location. Data Analysis Method: This study's method of analysis uses leverage analysis, which is carried out using the Multi-Dimensional Scaling (MDS) approach. This approach is modified from the RAPFISH (Rapid Assessment Techniques for Fisheries) program developed by the Fisheries Center, University of British Columbia (Kavanagh, 2001 in Fauzi and Anna, 2002). The MDS method is a multivariate statistical analysis technique using SPSS software, which transforms each dimension and multidimensionally the sustainability of women's participation in the sustainability of the IUWASH plus program in Malang Regency. Result and Discussion Sustainability Status of the Dimensions of Individual Characteristics of Women Based on the results of the MDS, the value of the sustainability index of the dimensions of individual characteristics at all research locations shows the lowest sustainability index value of 51.36% and the highest of 65.39%. Based on the results of the Leverage analysis, three attributes are obtained that are sensitive to the sustainability index value on the individual characteristic dimension. (1) initiative motivation, (2) behavior change motivation, and (3) social status Conclusion The participation of fisherwomen in the sustainability of the IUWASH Plush program in the Malang district is extensive. But often gets obstacles both from himself and from outside himself. Constraints that come from himself include a lack of motivation to understand sanitation, minimal knowledge about the importance of clean water for sanitation, low education, and a lack of skills. In all locations, the capacity possessed by women is sufficient to carry out the sustainability of the iuwash plus program covering five dimensions; 1) the dimensions of individual characteristics, 2) the dimensions of family characteristics, 3) the influential economic dimensions are factors of sanitation, product form and product certification. 4) partnership dimension with the attributes of extensionist support, input agency support, and institutional support, 5) access and control dimensions
18	Aulia Rohendi	Universitas Islam Negeri Ar-Raniry Banda Aceh		One solution that has begun to be implemented in Banda Aceh to address the problem of domestic liquid waste is the operation of a Communal WWTP (Wastewater Treatment Plant), namely an on-site (local) wastewater treatment plant that treats non-toilet wastewater and toilet waste. from a number of houses in a residential neighborhood (hamlet/village). In Banda Aceh, more than twenty Communal WWTPs have been built which are expected to prevent environmental pollution. So far, this program has been running well although not as smoothly as expected, for example due to an error in the connection from the distribution line to Home Connection (SR), blockages, rejection by some residents, and so on. This Communal WWTP in Banda Aceh was built in gampongs which were classified as slums (according to the Decree of the Mayor of Banda Aceh). In fact, all houses and buildings that produce waste must ensure the level of pollutant before discharging waste into water bodies. In the future, it is hoped that this WWTP can be adapted more broadly so that all houses and buildings can be connected to the WWTP.

				In addition to domestic wastewater generated by domestic activities (households, offices, dormitories, schools, etc.), it is also necessary to pay attention to household and larger industrial activities that have the potential to contribute to water pollution. Larger industries should have a special WWTP that is not affiliated with domestic wastewater because the characteristics of the wastewater may be different, requiring a different processing stage from the treatment of domestic wastewater. Several legal regulations in Indonesia have addressed the problem of pollution (Law no. 32/2009), and control mechanisms (Government Regulation no 22/2021), and also related to community participation (Law no 17/2019, etc.). More detailed regulations are needed at the regional level, both at the provincial and city/district levels so that the implementation of liquid waste management can run well because the strategy has been reviewed according to conditions in the area and the level of community participation. In several provinces and cities in Indonesia there are regional regulations governing the management of domestic wastewater, but in Banda Aceh this is not yet available. This study aims to determine the level of willingness of the people of Banda Aceh to participate in the management of domestic wastewater and what factors influence this level of willingness so that a strategy for implementing policies on wastewater management can be formulated. The research method used was a survey using a questionnaire instrument. The questionnaire is divided into three parts, namely the first part collects data on the characteristics of the respondents, the second part contains questions about people's perceptions of wastewater and pollution and the third part contains questions about the community's willingness to participate in waste management. Respondents so far numbered 102 people living in Banda Aceh City. The results showed that the community (both business owners and non-business owners) had a high level of willingness to participate (20% very willing. 70% willing). The form of willingness to participate that most respondents chose was "willing to attend meetings of community members related to waste water management" (52%) and "pay dues" (18%). From the results of research and discussion several conclusions can be drawn. First, the community have a high level of willingness to participate. Second, the form of willingness to participate that most respondents chose was "willing to attend meetings of community members regarding waste water management" and "pay dues". Several things need to be considered by the government, including the community should be involved in formulating policies or regulations related to the management of liquid waste. Furthermore, the government needs to provide environmental education so that people's insight and knowledge can increase and expand so that the implementation of policies related to liquid waste management can run well. Education related to the environment and liquid waste management also needs to be carried out so that the community's willingness can be more extensive.
19	Sri Irianti	National Research and Innovation Agency	Water, sanitation and hygiene (WASH) and Infection Prevention and Control in COVID-19 referral hospitals in Indonesia: Evidence from Indonesia	Introduction: Infection prevention and control (IPC) is empirically proven to have the ability to support the implementation of health system through the improvement of quality of healthcare services. Captivating evidence found that nearly 70% healthcare- acquired infections (HAIs) can be prevented by proper IPC interventions. In regard to the role of water, sanitation and hygiene (WASH) in the implementation of cost-effective the IPC interventions, integration and alignment of WASH has been highlighted to be appropriate strategies in the context of broader efforts to overcome antimicrobial resistance (AMR), health emergencies and inadequate quality of healthcare. However, a recent global assessment of IPC in 2021-2022 found that only four out of 106 assessed countries (3.8%) had all minimum requirements for IPC in place at the national level. As such, adequate WASH services in healthcare settings

				a prerequisite of quality of care and is needed to be addressed as it has not been studied yet in Indonesia. This study aimed to determine the existing conditions of WASH services and assess the readiness of such services during the COVID-19 pandemic. The findings can be used to inform policy making in COVID-19 management and other upcoming diseases' pandemic. Method: An online survey of WASH conditions and Infection Prevention and Control (IPC)'s facilities using core questions of WHO/UNICEF Joint Monitoring Program 2018 and WHO Guidelines on Core Components of IPC Programmes at the National and Acute Healthcare Facility Level (2016) was conducted in 106 (80.3%) Indonesian COVID-19 referral hospitals during the period 1-18 May 2020. Relevant indicators of five elements of WASH, namely water, sanitation, hygiene, waste management and environmental cleaning were assessed and were categorized into WASH ladders for healthcare facilities. Moreover, the 2018 WHO IPC assessment framework at the facility level was also used to determine the availability and condition of WASH and other facilities related to hygienic environment. Results: The highest proportion of referral hospitals were owned by local governments (74.5%) and the highest proportion of hospitals' class was B class (54.7%). No hospitals were found to meet all the five basic WASH indicators as the highest ladder, either before and during pandemic. The WASH elements which comply with basic ladder with the proportions >95% were water, hygiene and waste management. In contrast, the proportions of basic compliance of sanitation and environmental cleaning elements were lower, which were 60.4% and 76.4%, respectively. Overall, there were no significant differences between the proportions of compliance of all elements before and during pandemic. Concerning the conditions of the IPC facilities, there were four levels including inadequate, basic, intermediate and advanced. The results showed that all hospitals were in basic, intermediate and advanced levels. The ideal level for COVID-19 referral hospitals is advanced level, where all the IPC core components are fully implemented. However, there were only two provinces (West Sulawesi and Maluku) having hospitals with basic level. Moreover, in terms of the availability of isolation rooms, mechanical ventilations and energy, there were 18 out of 33 provinces which their all hospitals complied with the advanced level and there were also 3 provinces which its hospitals only complied with intermediate level. Conclusion and recommendations: IPC programs and WASH services in COVID-19 referral hospitals are considered inadequate as the highest level of services cannot be fully achieved. Also, inequality exists among hospitals classes, ownership and location. Global indicators have not been implemented in national surveys, resulting in incompatible data comparison. The findings of the study can be utilized by relevant stakeholders to revise the existing policies on hospital's environmental health and IPC programs implementation. Applied research and innovation to improve WASH services and IPC programs particularly in infectious diseases referral hospitals are needed as the upcoming disease pandemic can be more severe and complex. Furthermore, integration of WASH and IPC programs would be more promising in addressing HAIs and AMR as the two programs have been proven to be cost effective.
20	Dameria Maranatha Gloriani	Institut Teknologi Bandung		About 46% of the world's population, around 3.6 million people, are without safe sanitation services, and globally, 494 million people still practice open defecation. In Bali Province, although access to basic sanitation service is 95.01%, only 14.55% of the population have access to safely managed sanitation and 4.42% still practice open defecation. This percentage includes septic tanks that are emptied at least once in the last five years. Open defecation and the high rate of unsafely-managed sanitation in Bali can potentially result in wastewater infiltration into drinking water sources, discharging enteric microorganisms and fecal-borne pathogens, such as E.coli. As centralized, city-scale domestic waste treatments are expensive and complex, on-site sanitation is the key strategy to achieve safely-managed

				sanitation that includes fecal sludge management in many Low- to Middle Income Countries (LMICs) such as Indonesia. WASH services are considered sustainable if the five dimensions of sustainability factors (financial, institutional, environmental, technological, and social) are adequately addressed in the WASH program. This research focuses on financial flow modeling to achieve universal access to safely-managed sanitation using a financial simulator, eSOSViewTM, in Tabanan Regency, Bali. The aims of this paper are: (1) to analyze existing Faecal Sludge Management (FSM) and financial model applied in the study area; (2) to develop alternative financial models and analyze them using eSOSViewTM; and (3) to choose a financial model using Multi Criteria Analysis (MCA) and its application in the study area. The results are useful to build recommendations for achieving 100% safely managed on-site sanitation in Tabanan Regency. A Real Demand Survey (RDS) to households and semi-structured interviews to the private and government sectors were conducted to collect data imputed into the model. One hundred households selected by cluster random sampling method participated in the RDS. Stakeholders from the Bali Province PALD Technical Implementation Unit (UPT), and private party that provide Emptying & Transport (E&T) services were interviewed. This research resulted in five financial models. To choose the most suitable financial model for Tabanan Regency, Multi-Criteria Analysis (MCA) was employed. The MCA considered five aspects: financial feasibility (50%), public acceptance (15%), stakeholder capability (15%), compliance with the latest regulations and public policies (10%), and ease of implementing business models (10%). Out of five financial models, Model 3 was chosen as the most suitable business model to achieve universal access to safely-managed sanitation in Tabanan Regency, Bali. In Model 3, households need to pay a certain amount for the emptying fee and sanitation tax. UPTD as the city's fecal sludge management operator, receives discharge fees from the clients who dispose of their sludge to be treated at the fecal sludge treatment plant and budget support from the government authority (the Environmental and Forestry Service/DLHK). End-use products (fertilizers) from the fecal sludge treatment plant can be sold at pre-agreed prices to industries that need them. In the existing model, the fertilizers produced from the fecal sludge treatment plant (approximately 10 tons/month) are not for sale; they are used for the city parks, Tabanan Regency government offices, and Sembung Gede landfill, for free. In Model 3, we took an example of Semarang City. The base price per kg of fertilizers produced in 2014 was IDR 307/kg (including 5% profit). Considering an average annual inflation rate of 5%, the base price per kg of the fertilizers can increase to IDR 489/kg in 2022. The potential annual revenue from fertilizer sales of 10 tons per month is IDR 58,680,000. Additionally, UPTD can set the minimum purchase amount and enter into business cooperation agreements with agro-companies to sustain the business model. eSOSViewTM is an effective tool to assist local governments in performing financial model analysis with simple and easy to understand user-interface. It helps them to design strategies and decision making related to financial aspects in the FSM by providing comprehensive financial considerations. However, a deep understanding of the formulas and terminology used; and complete data is needed to be able to fill in the eSOSViewTM to get results with a minimal error rate. Moreover, not only in the Tabanan Regency area, but also this analysis can be applied to other areas with a note that the criteria chosen for the MCA are subjective depending on the characteristics of the area and the considerations taken by the researcher, so that for other researchers the results will be different. Based on the results of this study, the Government of Tabanan can achieve 100% safely managed on-site sanitation by applying emptying fees and sanitation taxes for households, discharge fees for private parties who dispose the faecal sludge in IPLT, purchase

				prices for agro-companies who buy the fertilizer, and budget support from the DLHK. These aspects will be the sources of revenues in Model 3 in eSOSViewTM.
21	Puguh Prasetyoputra	Research Center for Population, National Research and Innovation Agency (BRIN)	Disability and access to water and sanitation in Indonesia: Empirical Findings from a Nationally Representative Survey	Background: The world has seen much improvement in access to adequate water and sanitation. However, disparities across and within continents and countries still exists. Aggregate global figures may hide vulnerabilities pertaining to certain populations, such as children, older population, and people with disabilities (Mactaggart et al., 2018). Objective: This study aims to examine whether there is a difference of access to improved drinking water and sanitation between households with members that have disability and those without. Methodology: We employed data from the 2020 National Socioeconomic Survey (Core and Module). The outcome variables are time to drinking water source (dwtime3c) and access to improved sanitation facility (impsanit2c). The main explanatory variables Results: We find that households with members that have disability are more likely to rely on drinking water located outside of premises, than the households without disabled members. We also find that household with disabled members have lower likelihood of access to improved sanitation facility, compared to households without disabled members. Discussion/Policy Implications: There are disparities in access to drinking water and sanitation in relation to the disability of household members. Policies made to achieve universal access should also take into account these differences.
22	Adrian Chrisnahutama	Universitas Airlangga	Drinking Water, Sanitation, Handwashing facility, Environmental Hygiene and Diarrhoea among Under-Five (U 5) in Indonesia	Provision of clean drinking water, improved sanitation and basic handwashing facility are essential to prevent people to suffer various waterborne diseases, such as diarrhoea. Thus, leads to improving human health and human capital. This condition can lead to improve economic participation, hence help to increase national incomes, and reduce poverty. Globally, there are 1.7 billion cases of under-five (U5) diarrhoea every year. Moreover, diarrhoea is also responsible for killing 525.000 U5 every year, making one of the leading causes of children deaths. These high numbers are mainly contributed by numerous low- and middle-income countries. Lack of the provisions of those infrastructures are believed to be the cause of high incidence of diarrhoea. Furthermore, the drinking water in those countries are often contaminated due to pollution, making diarrhoea alleviation in these countries a complex issue. Indonesia also reflects this pattern. This study provided the empirical evidences of the effect of various sources of drinking water, sanitation, handwashing facility and environmental hygiene on diarrhoea incidents among under-five (U5) in Indonesia at household level. This study applied logistic regression analysis on 2012 and 2017 Indonesian Demographic and Health Survey (IDHS), a nationally representative dataset. This study divided drinking water as follows: 1) Surface water; 2) Unprotected dug well or spring; 3) Bottled/refill water; 4) Protected dug well or spring; and 5) Piped water. Sanitation facilities were divided as follows: 1) No facility; 2) Pit latrine; 3) Flush toilet which is shared/public; 4) Flush toilet with no septic tank, and 5) Flush toilet using septic tank. Handwashing facility were divided into: 1) No facility; 2) Facility on premises without water/soap presence; and 3) Facility on premises with water and soap presence. Environmental hygiene was measured using proportion of open defecation within community. The provision of clean drinking water, improved sanitation and basic handwashing facility are improved substantially between 2012 and 2017. This indicated that Indonesia had successfully provided those infrastructures. On the other hand, diarrhoea prevalence among U5 in 2012 and 2017 did not reduce significantly. Diarrhoea prevalence among U5 in Indonesia was reported by 14.4 percent in 2012 and 14.2 percent in 2017. Moreover, the prevalence was higher on younger, poorer, and children

				who lived in rural area. After controlling individual and household factors, this study found that higher quality of drinking water was significantly associated with diarrhoea prevalence reduction, with piped water had the highest effect. Furthermore, only flush toilet using septic tank type of sanitation was significantly associated with diarrhoea prevalence reduction. However, this study also found that these effects were fading when the provision of higher quality infrastructures were improved within community. The provision of various handwashing facility at household was not associated with diarrhoea prevalence. This reflects that the infrastructure availability at premises was not necessarily reduce diarrhoea if clean and healthy behaviour was not implemented. The proportion of open defecation in the community as environmental hygiene indicator was associated with diarrhoea incidence escalation. This illustrates the importance of environmental factors on diarrhoea alleviation as well as improving drinking water and sanitation simultaneously.
23	Dewi Isma Aryani	Universitas Kristen Maranatha		Fasilitas air siap minum di ruang umum (public space) bukanlah hal baru di Indonesia. Beberapa tahun lalu, sarana olahraga Institut Teknologi Bandung telah menyediakan fasilitas ini bagi para pengguna saraga. Sayangnya, kurangnya edukasi kepada pengguna serta rendahnya kesadaran masyarakat umum untuk menjaga dengan baik mengakibatkan ketidakberfungsian fasilitas air siap minum tidak dapat digunakan dan berhenti beroperasi. Fenomena ini diangkat untuk dikaji lebih mendalam menggunakan pendekatan metode kualitatif berupa survei dan keilmuan teori terkait, terutama dalam hal desain produk. Diharapkan melalui pembahasan ini dapat memberikan wawasan dan edukasi lebih baik lagi bagi masyarakat umum tentang pentingnya keberadaan fasilitas air siap minum di ruang umum.
24	Vera Yulyani	Universitas Malahayati		Kajian ini berupaya mengungkap permasalahan buang air besar sembarangan di kalangan penduduk perkotaan melalui perspektif politik. Kementerian Kesehatan RI memiliki kebijakan untuk mengurangi buang air besar sembarangan melalui program Sanitasi Total Berbasis Masyarakat (STBM) yang dimulai sejak tahun 2008. Dinas Pekerjaan Umum juga memiliki program sanitasi di masyarakat perkotaan yang dikenal dengan SANIMAS. Namun, masalah buang air besar sembarangan masih ada di kota Bandar Lampung. Penelitian ini menggunakan pendekatan kualitatif untuk mendapatkan informasi dari pengambil kebijakan di wilayah Kecamatan Tanjung Karang Pusat dan beberapa pemangku kepentingan lain yang bertanggung jawab di bidang sanitasi. Ditemukan bahwa masalah utama yang timbul dari buang air besar sembarangan di kalangan penduduk perkotaan adalah kepemilikan tanah yang masih disewakan dan kebiasaan masyarakat yang sulit diubah serta sulitnya air bersih. Masyarakat perkotaan yang tinggal di kawasan kumuh biasanya tidak memiliki jamban dan merupakan penduduk yang tidak memiliki lahan pribadi. Selain itu, komunitas ini biasanya berada di dekat sungai dan pantai. Studi ini menyarankan bahwa pemerintah daerah harus berani berinvestasi dalam program peningkatan akses sanitasi.
25	Bibah Aksari Ningsih	Nazava Water Filters	Pengaruh Penggunaan Filter Air Minum Pada Hidrasi Siswa Sekolah Dasar	Dehidrasi adalah kondisi ketika cairan tubuh yang hilang lebih banyak daripada yang dikonsumsi. Menurut penelitian, dehidrasi dapat mengurangi kemampuan kognitif. Hanya 21% sekolah di Indonesia yang menyediakan air minum yang aman untuk siswa. Akibatnya, para siswa mengkonsumsi air yang tidak aman untuk diminum, membeli minuman berpemanis gula , membeli air kemasan yang mahal, atau menderita dehidrasi saat di sekolah. Filter air minum adalah suatu alat yang berfungsi untuk menyaring dan menghilangkan kontaminan di dalam air dengan menggunakan penghalang atau media, baik secara proses fisika, kimia, dan biologi sehingga air sungai, hujan, dan sumur dapat langsung diminum. Penelitian ini bertujuan untuk mengetahui sejauh mana penggunaan filter air mampu meningkatkan asupan cairan anak siswa selama di sekolah. Selain itu, penelitian ini juga berupaya untuk mengetahui

				dampak alokasi filter air terhadap tingkat ketidakhadiran, tingkat konsumsi minuman berpemanis gula, dan angka diare pada siswa. Metode: Sebanyak 1212 filter air minum dipasang di 150 sekolah di Kabupaten Lebak, Banten. Lalu sebanyak 34.625 siswa mendapatkan edukasi tentang pentingnya hidrasi dan minum air yang cukup. Selain itu, dilakukan survey sebelum dan sesudah pemasangan filter air kepada 1500 anak mengenai kebiasaan minum air mereka. Meter air digital dipasang pada 23 filter yang dipilih secara acak untuk memverifikasi asupan cairan yang dilaporkan. Terakhir, diuji bakteri E.coli pada air sebelum dan sesudah filter dipasang. Program ini dilaksanakan pada saat Pembelajaran Tatap Muka (PTM) terbatas . Hasil: Sebanyak 87% anak menunjukkan bahwa mereka minum lebih banyak air di sekolah setelah filter air dipasang daripada sebelum filter air dipasang. Hasil meter air digital yang dipasang pada penyaring air menunjukkan bahwa para siswa minum rata-rata 239 mL air selama 2 jam di sekolah dibandingkan dengan sebelum filter dipasang yaitu 3 mL. Adanya PTM terbatas membuat kegiatan pembelajaran berlangsung selama 2 jam/hari dengan jumlah siswa yang hadir setengah dari total jumlah siswa. Total konsumsi air di sekolah meningkat dari rata-rata 80 mL/anak/hari sebelum program, menjadi 443 mL/anak/hari setelah program. Sebelum penyaringan, rata-rata jumlah bakteri E.coli dalam air baku di sekolah adalah 1300 CFU/100 mL. Setelah penyaringan, jumlah bakteri E.coli adalah 0 CFU/100 mL dalam semua kasus. Belum ada efek terukur yang ditemukan pada ketidakhadiran, konsumsi minuman berpemanis gula, dan diare pada siswa. Diskusi: Studi ini dilaksanakan saat PTM terbatas akibat pandemi COVID-19. Dengan demikian, diharapkan asupan cairan meningkat setelah sekolah kembali normal. Selain itu, untuk melihat efek yang lebih mendalam pada angka diare dan ketidakhadiran, program selanjutnya dapat dikombinasikan dengan upaya meningkatkan kualitas air minum di rumah.
26	Dr. Nick Goodwin	The Behavioural Insights Team	Mandat masyarakat efektif dalam mengembangkan norma sosial perilaku cuci tangan	Pandemi COVID-19 telah menggarisbawahi pentingnya perilaku kebersihan individu, seperti mencuci tangan dengan sabun, untuk mengurangi penularan virus. Banyak bantuan internasional telah diarahkan untuk mengurangi penyebaran COVID-19, termasuk penyediaan tempat cuci tangan umum (TCT) di lokasi dengan lalu lintas tinggi seperti di luar masjid, sekolah, dan pertokoan. Studi ini berusaha untuk mengevaluasi efektivitas intervensi untuk meningkatkan penggunaan TCT yang dikelola oleh LPBI NU, sebagai bagian dari kemitraan program SIAP SIAGA antara Australia dan Indonesia -- khususnya, efektivitas “mandat masyarakat” dalam meningkatkan norma sosial penggunaan TCT. Tokoh masyarakat di komunitas desa, seperti pemuka agama, melatih “pemangku mandat”, yaitu staf di lokasi TCT itu, termasuk satpam sekolah, pelayan toko dan restoran, dan pengurus masjid. Pemangku mandat itu dilatih untuk mengarahkan masyarakat untuk menggunakan TCT sebelum memasuki tempat umum dimana TCT tersedia. Uji acak terkendali secara klaster dilakukan pada 180 TCT di 18 desa, di 9 kabupaten/kota. Jumlah orang yang mencuci tangan diukur di setiap lokasi TCT selama 7 hari pada jam-jam tersibuk yang sudah ditentukan sebelumnya. Proses evaluasi kualitatif juga dilakukan dengan menggunakan survei telepon dan diskusi kelompok terfokus dengan para pemangku kepentingan di setiap desa untuk mengukur persepsi masyarakat mengenai norma sosial seputar mencuci tangan. Hasil model regresi linier yang telah ditentukan sebelumnya menunjukkan bahwa intervensi tersebut menyebabkan 72% lebih banyak tindakan cuci tangan di TCT perlakuan, setelah mengontrol untuk jenis lokasi di sekitar TCT (misalnya sekolah, tempat ibadah), tanggal pengamatan, dan desa. Ini berarti intervensi tersebut telah menambahkan

				607 hitungan pencucian tangan di TCT perlakuan dibandingkan dengan kontrol selama jam-jam sibuk, per desa, per minggu. Selain itu, mengoreksi untuk ukuran populasi dalam model itu tetap menghasilkan hasil positif, tetapi tidak signifikan. Temuan kualitatif menunjukkan bahwa intervensi tersebut telah meningkatkan norma sosial seputar mencuci tangan yang dirasakan oleh para penduduk di desa perlakuan. Pengaruh intervensi bervariasi di seluruh desa, yang menunjukkan heterogenitas dalam respon desa terhadap mandat masyarakat. Hasil evaluasi itu menunjukkan bahwa mempromosikan mandat masyarakat itu merupakan pendekatan yang efektif. Mengembangkan kebijakan yang mengacu pada norma sosial sepertinya dapat menjadi alat yang produktif dan hemat biaya untuk mempromosikan dan membudayakan cuci tangan atau perilaku higiene lainnya. Karena pendekatan ini memanfaatkan jaringan dan sumber daya manusia yang sudah ada, mandat masyarakat itu merupakan pendekatan yang layak diterapkan dengan skala besar.
27	Muliani Ratnaningsih, Heribertus Rinto Wibowo, Nicholas J. Goodwin, Yulida Pangastuti, Ade Ayu Kartika Sari Rezki, Ridwan, Ratnakanya Nitya Hadyani, Derry Fahrizal Ulum, Tanti Kosmiyati Kostaman, Reza Hendrawan, Amelia Tristiana, Ayu Widhi Lestari	Tulodo Indonesia		Introduction. In Indonesia, menstrual hygiene in adolescents is still relatively inadequate. Due to a lack of accurate information, adolescents still have a limited understanding of the menstrual cycle and menstrual hygiene. Menstruation as a taboo topic to discuss in society, lack of clean water, sanitation, personal hygiene, lack of services, and infrastructure particularly in low- and middle-income countries are several problems related to menstrual hygiene among women and girls. There are five factors contributing to menstrual hygiene: biological, personal, interpersonal, environmental, and societal. This study will highlight two factors: personal factors (knowledge and behavior) and environmental factors (water, availability of sanitation, and hygiene facilities). Methodology. The study was a baseline study for the BERANI (Better Reproductive Health and Rights) program. The study used a quantitative approach with a cross-sectional design. The participants consisted of adolescent girls aged 13–15 years in Central Sulawesi and South Sulawesi. A total of 483 respondents (249 respondents from South Sulawesi and 234 respondents from Central Sulawesi) joined the study. Results. Adolescent girls' knowledge about menstrual hygiene was still low. A total of 49.4% of girls didn't know that bathing when menstruating was good for health. Only 39.7% of girls looked for additional information on menstruation particularly on how to take a shower or clean themselves during menstruation. Most girls (84.9%) didn't want to change menstruation pads in the school bathroom. Several reasons not to replace pads at school: 51.9% of girls reported that there was no trash can to dispose of sanitary napkins, 40.9% of girls reported that they were afraid of being spied on, 27.9% of girls reported that there were no pads at school. 20.2% of girls reported that the toilet was dirty, 11.7% of girls reported that the toilet door did not have a lock, 8.2% of girls reported that the toilet was mixed between boys and girls, and 5.5% of girls reported that there was no water and no bin. Regarding availability sanitary pads, 46.1% of girls reported that sanitary pads were not provided at school. Out of the girls who said school did not provide sanitary pads, 65.0% reported students must pay for sanitary pads. Out of girls who had experienced menstruation (72.9%), most of them (65.8%) did not attend school due to menstruation at least one day. The reasons include fear of dirtying the uniform (32.3%), feel sick during menstruation (18.2%), fear of smell (16.3%), no place for washing or changing pads in school (10.2%), fear of others mocking them (9.0%), and the school toilet was dirty (5.6%). Conclusion. Girls' management confidence would increase if there is less stigma associated with menstruation in schools, as they will be more able to talk about their menstruation and seek peer support. Features of sanitation facilities that help menstrual management, such as disposal, lighting, and cleanliness, are crucial at home and school. Teachers and parents are expected to continue providing knowledge about menstrual hygiene to girls.

28	Heribertus Rinto Wibowo	Tulodo Indonesia	Menstrual health management campaign targeting community members and adolescents in South Sulawesi	Introduction. Menstrual health management (MHM) deals with the specific hygiene and health requirements of women during menstruation. Water, sanitation and hygiene facilities appear to be inadequate in many school settings including in Indonesia. A program called "BERANI," or Better Reproductive Health and Rights for All in Indonesia (UNICEF) was conducted from 2019 to 2021 in Bone, South Sulawesi, focusing on child marriage and menstrual health management issues. This study aims to explore the MHM campaign and the parents' and adolescents' responses to the campaign. Methodology. The MHM campaign through the BERANI program was conducted in the six intervention sub-districts in Bone Regency, South Sulawesi. The communication materials focusing on child marriage prevention and menstrual health management issues were developed (e.g., board games, story books, ustadzah toolkit, and khotbah seragam). Adolescent children received the BERANI campaign through the Life Skills Education (LSE) activities at school delivered by teachers; while to reach parents and adults, a series of community meetings were conducted from September to December 2020. A mixed method research using quantitative and qualitative approaches was conducted. A total of 1,004 respondents and 1,000 respondents participated in the baseline and the endline study respectively (consisting of 50% were parents and 50% were adolescents aged 13-15 years). A total of 80 interviews and 12 FGDs were conducted. Results. Overall, a total of 1,490 community members were reached in the community meetings, consisting of 91.5% women (n=1,363) and 8.5% men (n=127). While for the school-based intervention, a total of 159 teachers and 5,022 children aged 13-15 years (2.598 girls and 2,424 boys) participated in LSE activities. There was an increase in the average score for knowledge related MHM from 5.30 (SD= 2.7) to 6.95 (SD= 3.5). Girls were more likely to have a higher level of knowledge on MHM compared to boys. Children in school were more likely to have a higher level of expertise related to MHM than children out of school. Children in higher grades were more likely to have a higher level of knowledge on MHM than those in lower grades. The qualitative study also found that some respondents mentioned the importance of providing menstrual pads at school so that girls can change the pads at school. In the qualitative study, parents stated that BERANI had promoted menstrual health management as after receiving the information on MHM, children, particularly girls become more open in discussing the MHM. The introduction of reusable pads was also considered as new and beneficial. Conclusions. Overall, the BERANI program has improved adolescents' knowledge of MHM through Life Skills Education (LSE). Parents also responded positively to the campaign as they mentioned that the BERANI program has introduced them to the MHM topics so that they could discuss with their children. This study also suggests that men and boys can support women and girls to manage menstruation effectively. There is a need to continue promoting MHM with support from local government and relevant stakeholders.
29	Ni Made Utami Dwipayanti	Universitas Udayana	Socio-Ecological Barriers to Women Empowerment in Sanitation in Eastern Indonesia	The Water, sanitation and hygiene (WASH) program is a strategic entry point for gender mainstreaming, while a gender sensitive WASH program can lead to a better WASH outcome [1, 2]. Frameworks have been developed to assist practitioners in improving and evaluating gender outcomes in WASH programs [3, 4]. However, practitioners need to understand the underlying barriers to women empowerment at different socio ecological levels in the community before implementing the intervention program. Socio-e Ecological model based on the Ottawa Charter frameworks has been used to understand barriers to sanitation access along the service stages [5, 6]. The socio -ecological levels include structural, environmental, cultural, individual and service level, while the sanitation stages include acceptance, construction, utilisation, maintenance and safe reuse and disposal. Gender sensitive sanitation programs have been

				piloted in some parts of Indonesia, but have not been scaled up to national level. Using a case study of the national sanitation program (Sanitasi Total Berbasis Masyarakat – STBM) in Eastern Indonesia, this paper discusses barriers to sanitation access at each socio-ecological level using gender empowerment lens. The experience in the area might assist practitioners to identify determinants before designing sanitation intervention with better gender outcome. Methods A qualitative study was conducted in two districts, Central Lombok in West Nusa Tenggara and West Manggarai in East Nusa Tenggara) from June – August 2022. District of Central Lombok currently has been declared as Open Defecation Free (ODF) district with 100% sanitation access, while West Manggarai Barat has 71% sanitation coverage [7]. Data was collected from 4 FGD with women groups, 2 FGD with adolescent groups, and 30 in-depth interviews with local stakeholders related to WASH and gender issue such as health/community cadres, formal and informal community leaders, community facilitators (local NGOs), and government staff including from women empowerment office, health office and planning agency. FGD and interview recordings were transcribed and analysed with thematic analysis using NVivo software. The findings were then verified and an action plan was discussed in a workshop with key stakeholders at each district. Findings Sanitation access and related roles of women In general, there has been an awareness that housewives, especially housewives with children, are the ones who deal with water and sanitation within the house and therefore are seen as having more responsibility regarding that matter. The absence of a sanitation facility within the house will induce the open defecation practice among women, including improper disposal of diapers due to a lack of trash bin. Even if sanitation facilities are available, women often complain that the facility is not comfortable or they lack privacy. They usually have the responsibility to clean the toilet while water availability is limited. This creates a double burden for women for other domestic chores they have in the houses. Barriers to Women Empowerment in Sanitation a. Structural barriers: Although ideas regarding sanitation for women are present, the lack of explicit regulation at district level makes government officials hesitate to act. This is often because the current focus of the local government is still on increasing sanitation access for the general population. Moreover women organisations at the village level often have low power and only accept what has been decided for them. FGD participants mentioned that they were rarely invited, although they said that they would be happy if they could participate in the meeting. This shows that when the program guidelines do not clearly regulate how and when to involve women, the women participation tends to be low. b. Environmental barriers Women limited mobility and house distance to village offices often being a barrier to women participation in sanitation programs. The setting and the time selected for program meetings sometimes do not match with housewives' daily schedule. Sanitation facilities are not supported with women needs such as not providing enough privacy and lack facilities during the menstrual period (covered trash bin and menstrual pad) c. Cultural and Norm barriers The voices of women are often unheard because of the cultural issue and the mentality of women themselves. Some participants suggested that the patriarchal culture in the area explains why women often hesitate to voice their opinion

				and why women's opinion is seen as not important to be considered. This occurs at both household and community level which creates an imbalance in decision making and maintenance of sanitation access. d. Individual barriers There is a lack of awareness of women rights to sanitation among participants at both community and government levels. Specific rights to sanitation are somewhat absent in the policy discussion within the women empowerment sector. From FGD, participants reported that women's voices are being noticed and the women are well educated and participated in the workforce. This suggests that if women have resources, skills or power, they are more likely to voice their opinions and sometimes lead an action. e. Service barriers: Although women's involvement in STBM has been extensive through the involvement of community health cadres, the capacity to facilitate gender transformative programs is limited. The awareness and capacity of village women organisations is also limited regarding gender issues and how to address it in sanitation programs. Conclusion Barriers to women empowerment in sanitation programs exist at different socio-ecological levels. Those barriers are lack of commitment and clear guidelines, women mobility, women roles in patriarchal culture, women lack awareness, low education and economic status and lack capacity of human resources with gender sensitive facilitation skills. Then, it requires action strategies addressing the barriers accordingly at different socio-ecological levels to better integrate gender consideration in national sanitation programs.