FREE AND PUBLIC WIFI INITIATIVES IN AFRICA, ASIA AND THE PACIFIC

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Executive summary

As the value of access to digital services and platforms continues to grow, bridging the digital divide has become an increasingly pressing problem for governments. Traditional network operators have gone a long way in making the internet accessible to much of the world. However, their business models have stalled when it comes to providing access to those for whom commercial services are either too expensive or inaccessible, or both.

The deployment of publicly accessible WiFi hotspots that are free or mostly free to use has emerged in the last 10 to 12 years as a relatively low-cost means for governments to take steps to address the digital divide. As a result, there have been a significant number of these initiatives, both in developed and global South countries.

As a communications technology, WiFi has a variety of advantages over other access technologies, making it an attractive choice for the provision of affordable access. First, unlike mobile technologies, WiFi does not require a spectrum licence for use. Spectrum licences can be extremely expensive and also require a comparatively long period of time to acquire. In contrast, WiFi can be put to use as soon as it is plugged in. Second, mass manufacturing and innovation have lowered the cost of WiFi to the extent that a WiFi access point may cost less than USD 100. Lastly, WiFi is ubiquitous in client devices from smartphones to tablets, laptops and much more. Put together, these factors make WiFi a natural choice as a network extension technology, especially in urban areas where even a single WiFi hotspot, with a range of 50 to 100m, can reach large numbers of people.

This report examines 60 free and public WiFi initiatives in 25 selected countries in Africa, Asia and the Pacific. The choice of regions and countries relates to the areas in which the Association for Progressive Communications (APC) is actively involved in affordable access work, as well as the availability of public information.

Across the selected countries in these regions, we found that public WiFi initiatives may originate at the local municipal or town level, or may come from a state-level or national initiative. It is not uncommon to find all three levels of activity happening at the same time. While most public WiFi initiatives appear to be sincerely motivated from the point of view of closing the digital divide, or the desire to promote tourism, economic development or to support education, the coincidence of free public WiFi initiatives with election cycles suggests that they are also an attractive publicly-visible announcement for politicians.

It is also evident that commercial internet service providers (ISPs), especially those already delivering access via public or private WiFi, also see the value in having a free tier offering as a marketing tool in order to expose consumers to the benefits of internet access. The combination of private interests on the part of ISPs and public interests on the part of governments has proven to be a potentially sustainable combination in terms of public WiFi, although it is evident that the devil is in the details, as some public-private partnerships (PPPs) have thrived and others have not. In general these partnerships seem to work best when institutions play to their strengths.

Large corporations have used free public WiFi initiatives as a form of brand promotion. For example, Coca-Cola, TikTok and others have announced free WiFi initiatives as a form of corporate promotion. Silicon Valley's global tech company initiatives, such as Google Station and Meta's Express WiFi, also saw the affordability and value of WiFi as a technology with

which to bridge the digital divide, but their commitment appears to have been somewhat fleeting when it proved difficult to make the initiatives financially sustainable.

Partly related to sustainability issues, while much fanfare is made of the launch of free public WiFi initiatives, there is often not much follow-up in terms of assessing whether the project achieved its goals. There is also a lack of impact evaluation to understand if and how free public WiFi initiatives are changing people's lives. Much of the data for this report has been gathered from public news sources, most of which don't offer any insight into the actual uses to which public WiFi is put.

Also lacking is information on the total cost of free public WiFi initiatives. While we may know that a single WiFi access point is extremely affordable, the total cost of public WiFi may be affected by factors including internet costs, unavailable or expensive access to real estate for public deployment, maintenance issues, a lack of competition in public tenders or corruption in tender processes. Accurately assessing costs can be made more complicated by public WiFi initiatives sometimes being bundled with other projects, such as national fibre optic backbones. This is not uncommon, as pairing fibre optic assets with WiFi can be a natural value add for fibre optic network owners, but this often makes it a challenge to match project costs with other similar initiatives. Any public WiFi initiative needs to seriously take into consideration the long-term costs of service provision, especially in the context of changing governments.

Any public WiFi initiative needs to, from the onset, seriously take into consideration the long-term costs of service provision, especially in the context of changing governments. There is also a challenge for governments to balance the desire to offer free WiFi access to citizens with the potential dangers of undermining existing low-cost (but not free) WiFi services provided by commercial ISPs or community networks.

The most successful free public WiFi initiatives seem to involve a range of actors, with each partner being clear about what they are contributing and what they are getting out of the project. It is evident that a range of ownership and operator models exist, and that there isn't a single successful model. Understanding the range of stakeholders and their potential roles is key to designing a successful initiative.

Many questions still remain. What approaches to public WiFi are most likely to lead to success? What is the real impact of public WiFi on vulnerable populations? Is public WiFi benefiting everyone equally? Are potential harms being introduced alongside the benefits of public WiFi? We hope this report will catalyse more interest in and research about free and public WiFi initiatives.

Introduction

In 2010, David Isenberg (an early researcher of internet architecture) speculated on what might happen if Apple made WiFi the default on the iPhone. He said, “Under this scenario, using licensed spectrum would be like smoking. First you wouldn’t use it in stores and restaurants. Then you wouldn’t use it in your house. Soon, there will be no need to do it on trains, planes or buses. You’ll only do it in your car, or if you’re walking.”[1] Fast forward to 2024 and, even though Apple didn’t do this, his words seem prophetic. We use WiFi in houses, in airports, cafes, conference centres, shopping malls and more. Recognising WiFi’s utility in providing cost-effective location-based wireless internet access, cities, state and national governments, Internet Service Providers (ISPs) and even digital platform companies have launched initiatives to increase affordable and ubiquitous access to the internet. This report seeks to profile WiFi initiatives that have deliberately been designed to extend affordable internet access, either for free or at very low cost. As such, it will not touch on more general WiFi deployments by operators of public spaces, such as airports, libraries or cafes. The report focuses on the regions of Africa, Asia and the Pacific. It doesn’t attempt to be exhaustive in capturing every country or WiFi initiative, but seeks to draw on enough examples to create a representative picture of public and free WiFi initiatives and draw out some common themes.

1. TelecomTV One. (2010, 9 April). Are mobile operators in danger of losing their ‘default’ status. https://web.archive.org/web/20100527183641/http://web20.telecomtv.com/comspace_newsDetail.aspx?n=46182&id=5fff3c12-9cb8-4a91-a3ca-7a7fc9bba247

Africa

Public WiFi hotspots have been available in African countries from the early 2000s. Airports and coffee shops were often the early adopters. However, with a few exceptions, it wasn't until 2013 that the first substantial public WiFi initiatives offering some level of free access really took off. In 2013, Project Isizwe in South Africa launched public WiFi networks in Stellenbosch and Pretoria.[2] That same year in Rwanda, the Smart Kigali programme began to offer WiFi in public spaces in Kigali.[3] And in 2014, a similar initiative was announced in Nakuru County in Kenya.[4] This section profiles the growth of free public WiFi services in nine African countries.

Ghana

NITA (E-Connecta, SkyFi)

In 2016, the Government of Ghana's National Information Technology Agency (NITA), in partnership with E-Connecta, launched a public WiFi hotspot service, SkyFi, with an integrated payment system (mobile money, card payment, etc.).[5] Phase One of the project covered the Accra Technical University, Tema Lorry Station, airport, Burma Camp, Korle-Bu, University of Professional Studies, Makola, Osu, 37 Military Hospital and Lorry Station, the University for Development Studies (Tamale) and the University of Health and Allied Sciences. Phase Two planned to extend its coverage to other parts of the country with an increased focus on tertiary education institutions. SkyFi users would use their single login credentials to connect to SkyFi anywhere it was available.[6] There have been no online news updates regarding SkyFi since its launch in 2016.

Vodafone (Express WiFi)

In 2019, Vodafone Ghana partnered with Facebook to deploy Express WiFi in residential areas. It was reported that some 200 Facebook Express WiFi hotspots had already been installed in the capital city Accra,[7] in areas including Nima, Maamobi, Pigfarm, Jamestown and Abossey Okai, and there were plans to extend the service beyond the capital.[8]

Express WiFi was designed to support small retail entrepreneurs' ability to offer fast and affordable Wi-Fi services at hotspots spread across their communities via a small hotspot device made possible by Vodafone and Facebook.

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2. Akabor, N. (2013, 26 November). Free Pretoria Wi-Fi Now Live. *TechCentral*. https://techcentral.co.za/free-pretoria-wi-fi-now-live/189136/
3. Atieno, M. (2014, 1 March). Free Wi-Fi Program Dubbed Smart Kigali Enhancing Rwanda's Productivity. Innov8tiv. http://innov8tiv.com/free-wi-fi-program-dubbed-smart-kigali-speeding-rwandas-development/
4. Macharia, W. (2020, 29 June). Nakuru becomes first Kenyan town to get free Wi-Fi. *Nation*. https://nation.africa/kenya/counties/nakuru/nakuru-becomes-first-kenyan-town-to-get-free-wi-fi-967582
5. Business World Ghana. (2016, 7 December). SkyFi launches public Wifi services. https://www.businessworldghana.com/skyfi-launches-public-WiFi-services
6. Julio. (2016, 30 November). New Public WiFi, (Skyfi) Launches in Ghana at Accra Technical University. *Kuulpeeps*. https://kuulpeeps.com/2016/11/30/new-public-WiFi-skyfi-launches-in-ghana-at-accra-technical-university/trending/news
7. Hetting, C. (2019, 17 February). Vodafone Ghana teams up with Facebook for nationwide Wi-Fi. *Wi-Fi NOW Global*. https://WiFinowglobal.com/news-and-blog/vodafone-ghana-teams-up-with-facebook-for-nationwide-public-wi-fi/
8. Maseko, F. (2019, 7 February). Ghana gets affordable Wifi services. *IT News Africa*. https://www.itnewsafrica.com/2019/02/ghana-gets-affordable-wifi-services/

Customers would then buy login codes to access the platform, connect to any available hotspot out of the 200 within Accra and subscribe to a range of packages. 100 megabytes of data on the service cost GHS 1.00 (USD 0.19), while one gigabyte cost GHS 5.00 (USD 0.95).[9]

WiFi for Education

In 2020, the Government of Ghana integrated 13 universities into its free WiFi project. The WiFi network was built by the Electricity Company of Ghana, leveraging its 650 kilometre-long fibre optic network. The fibre network was built in collaboration with NITA, the Ghana Grid Company Limited and Northern Electricity Distribution Company Limited, at a cost of USD 11 million.[10] The WiFi roll-out to universities was a pilot project intended to help the implementing agencies and government identify any unforeseen challenges ahead of rolling out free WiFi services in 722 public senior high schools and 46 colleges across the country.[11]

As of 2020, the Government of Ghana claimed to have "installed free WiFi in 80% of senior high schools".[12] In 2022, Fact-Check Ghana attempted to verify this through a freedom of access to information request. The Ghana Education Service reported that "the free WiFi project had been completed in 663 Senior High, Technical, and Vocational Schools".[13] However, a subsequent investigation by Africa Education Watch in 2023 revealed that only 22% of schools had functioning WiFi systems.[14]

CellTel (Smart Cities)

In 2019, Celltel Networks Limited (a national ISP), Roberta Annan Consulting and the Chinese government's international cooperation company, the China National Electronics Import and Export Corporation (CEIEC):

[S]igned a memorandum of understanding (MoU) to collaborate in the execution of the US$300 million Ghana smart cities project under the brand name ArisCel. Under the MoU, Ghanaian company, Celltel Networks is the concept developer, Roberta Annan Consulting is onboard as transaction advisors for CEIEC, while CEIEC joins a consortium of expert companies to deliver on the project.[15]

9. Oludimu, T. (2019, 7 February). Express Wi-Fi launches in Ghana. *Techpoint Africa*. https://techpoint.africa/2019/02/07/express-WiFi-launch-ghana
10. Ecofin Agency. (2020, 23 November). Ghana: 13 universities join the free Wi-Fi project. https://www.ecofinagency.com/telecom/2311-42087-ghana-13-universities-join-the-free-wi-fi-project
11. ECG News. (2020, 14 May). 13 public universities connected to free internet service. *Electricity Company of Ghana Limited*. https://ecg.com.gh/index.php/en/media-centre/news-events/13-public-universities-connected-to-free-internet-service
12. Ferdinand, E. (2020, 1 October). Government has installed free Wifi in 80% of Senior High Schools – Bawumia. *EducationGhana*. https://educationghana.org/government-has-installed-free-WiFi-in-80-of-senior-high-schools-bawumia
13. Asante, K. K. (2022, 21 April). FACT-CHECK: Has Gov't provided free WiFi for over 700 SHSs? *Fact Check Ghana*. https://www.fact-checkghana.com/fact-check-has-govt-provided-free-WiFi-for-over-700-shss
14. Ferdinand, E. (2023, 7 July). Free SHS: Only 22% of Schools have Functioning Wi-Fi to Facilitate the use of ICT. *EducationGhana*. https://educationghana.org/free-shs-only-22-of-schools-have-functioning-wi-fi-to-facilitate-the-use-of-ict
15. Celltel Networks Limited. (2019, 5 November). $300m Smart Cities Project. https://celltel.com.gh/strategy-for-norways-peion-to-fund-global/

The project was “designed to provide affordable nationwide Wi-Fi network in collaboration with the local government institutions and other strategic and relevant government agencies”.[16]

In 2021, Celltel was “granted full nationwide authorization by the National Communications Authority (NCA) to roll out [the] Ghana Smart Cities Project” and with it the authorization to use “2.4GHz and 5.8GHz bands nationwide and VSAT Network Class 3 (1-49 terminals) nationwide to provide access to its clients.” Celltel announced that the nationwide Wi-Fi service would “come with Celltel-branded smart handheld, desktop and home devices” for every subscription. The authorisation came with a five-year expiration period, [and] Celltel would be required to commence operations within two years of getting a written greenlight note to start”. Celltel would be “required to pay [an] annual fee on June 20 every year to keep the authorization active.”[17]

Celltel announced that part of its roll-out plan is to collaborate on co-location and infrastructure sharing. The WiFi service is intended to be accessible through affordable subscription packages.[18]

GIFEC (Digital Acceleration Project)

In 2023, the Ghana Investment Fund for Electronic Communications (GIFEC) announced the implementation of the Digital Acceleration Project. Part of the implementation of this project involved the planned deployment of free WiFi at “120 Community Information and Communication Technology (ICT) Centers across the country within four years.”[19]

Kenya

Liquid Telecom (BilaWaya)

In 2015, Liquid Telecom set out to deploy free public WiFi in different counties in Kenya as part of a USD 50 million (approx KES 4.5 billion) investment partnership with said counties. In February of that year, the company took over a contract from Orange Kenya to connect Nakuru County with free WiFi and installed new equipment at a cost of USD 400,000 (approx KES 36 million). The free internet was reported to cover a 10 kilometre radius with speeds of up to 1 Gbps, and the project had 60 hotspots in place at the time of reporting, including in shopping malls, stadia, university campuses and the county’s central business district.[20] Nakuru’s community WiFi service was dubbed BilaWaya.[21]

16. Ibid.
17. Awal, M. (2021, 27 December). Celltel set to roll out US$300million Ghana Smart Cities Project. *The Business and Financial Times Online*. https://thebftonline.com/2021/12/27/celltel-set-to-roll-out-us300million-ghana-smart-cities-project/
18. O’Grady, V. (2022, 5 January). Ghana’s Celltel gets the go-ahead for major Wi-Fi project. *Developing Telecoms*. https://developingtelecoms.com/telecom-technology/wireless-networks/12627-ghana-s-celltel-gets-the-go-ahead-for-major-wi-fi-project.html
19. Mensah, F. A. (2023, 8 December). Free WiFi Connection: GIFEC to begin Ghana Digital Acceleration Project. Ghana News Agency. https://gna.org.gh/2023/12/free-WiFi-connection-gifec-to-begin-ghana-digital-acceleration-project/
20. Telecompaper. (2015, 16 February). Liquid Telecom Takes Over Nakuru Free Wi-Fi Contract. https://www.telecompaper.com/news/liquid-telecom-takes-over-nakuru-free-wi-fi-contract--1065309 .
21. Riaga, O. (2015, 16 March). BilaWaya: The exciting free Internet in Nakuru. *Kachwanya*. https://www.kachwanya.com/2015/03/16/bilawaya

That same year, Liquid Telecom reported its intention to invest USD 400,000 in internet infrastructure in Kilifi County, where 11 ministries in Kilifi would be connected with a 10 kilometre wide area network (WAN). It is not clear if Liquid Telecom deployed public WiFi hotspots in Kilifi.[22]

By 2016, the company had installed free public hotspots in Nairobi, Nakuru, Mombasa, Kisumu, Eldoret, Kajiado and Nyeri. In the same year, the company launched an app mapping the more than 350 free WiFi hotspots it had installed so far across the country. The app assists Kenyans in finding WiFi zones with some form of free public access, running from a minimum of 15 minutes of free use to unlimited free use. The app shows the location of the free WiFi as well as the address and contact details for each hotspot.[23]

Mawingu

Established in 2013, Mawingu began offering internet access via WiFi hotspots in rural Kenya, initially in Laikipia, Nyeri, Embu and Meru. Users accessed its services through a network of 300 WiFi hotspots at costs as low as "$0.50 per day, $1 per week, $3 per month or $10 for three months. Mawingu offered "free access through libraries, schools, and health centers." The project initially relied on a combination of unlicensed WiFi access points and TV White Space (TVWS) technology for backhaul links. Delays in making TVWS spectrum available beyond a pilot period led Mawingu to replace their TVWS network with WiFi equipment.[24] Subsequently, the network provided connectivity through solar-powered, 5GHz point-to-point and point-to-multipoint" WiFi equipment.

In 2023, Think WiFi, a South African wireless ISP, and Mawingu announced the launch of the OpenWiFi network in Kenya,[25] offering free internet access based on an advertising-driven model. The network is built on top of Mawingu's network infrastructure and is managed from Think WiFi's headquarters in South Africa.[26]

In early 2023, Mawingu launched a project to extend its network to 25 counties, having raised USD 9 million from investors InfraCo Africa (USD 6 million), E3 Capital (USD 1.5 million) and FMO (USD 1.5 million). The expansion targets western Kenya (Kisii, Migori,

Bungoma and Kakamega).[27] As of the end of 2023, the company is operating in 26 counties,[28] and serves about 2% of the fixed internet market in Kenya, with over 26,000 subscribers.[29]

22. IT News Africa. (2015, 26 March). Kenya: Liquid Telecom invests USD 400,000 into Kilifi. http://www.itnewsafrica.com/2015/03/kenya-liquid-telecom-invests-usd-400000-into-kilifi/
23. Telecompaper. (2016, 29 March). Liquid Telecom launches app mapping 350 free Wi-Fi hotspots. https://www.telecompaper.com/news/liquid-telecom-launches-app-mapping-350-free-wi-fi-hotspots--1135596
24. 1 World Connected. (2020). *Mawingu: Providing Connectivity Through Affordable Internet Access Using Unlicensed Spectrum in Rural Kenya*. https://1worldconnected.org/project/africa_tvws_mawingukenya/
25. OpenWiFi is an open source, disaggregated WiFi software system. It is an initiative of the Telecom Infra Project. For more, see: https://telecominfraproject.com/openwifi/
26. Lynn, A. (2023, 12 May). Think WiFi and Mawingu Launch First Ad-Funded TIP OpenWiFi Network in Kenya. *The Fast Mode*. https://www.thefastmode.com/services-and-innovations/32000-thinkWiFi-and-mawingu-launch-first-ad-funded-tip-openWiFi-network-in-kenya
27. Mwangi, K. (2023, 1 February). Internet firm Mawingu gets Sh1.1bn for expansion drive. *Business Daily Africa*. https://www.businessdailyafrica.com/bd/corporate/companies/internet-firm-mawingu-gets-sh1-1bn-for-expansion-drive--4108118
28. https://mawingu.co/
29. *Sector Statistics Report Q2 2023-2024*. (2023, December). Communications Authority of Kenya. https://www.ca.go.ke/sites/default/files/2024-03/Sector%20Statistics%20Report%20Q2%202023-2024_0.pdf

poa! Internet

poa!, an ISP that serves low and middle-income neighbourhoods, began operations in 2015, providing services in Kibera and Kawangware, which are low-income "slum" dwellings.[30] They currently provide street WiFi at over 10,000 hotspots in the service areas where poa! is available. The service is free up to the first 100 MB of data. As of 2024, the company charged KES 20 (approximately USD 0.15) per additional 1 GB of non-expiry data with internet speeds of 4 Mbps.[31] In 2022, poa! received USD 28 million in a funding round led by Africa50, bringing the total amount it has raised to date to USD 36 million. This is after the ISP won "an innovation challenge that sought affordable and reliable solutions for last-mile internet connectivity across the continent."[32] As of 2024, poa! Operates in Nairobi, Kiambu, Kajiado, Nakuru and Mombasa Counties.

Government of Kenya (Free WiFi)

The first initiative by the national government of Kenya to roll out public WiFi was announced in 2015 in which the government of Kenya through its county governments partnered with Liquid Telecom "to introduce Wi-Fi networks to underserved towns up and down the nation."[33] The first network was launched in Nakuru County.

In June 2016, the government – through the Communications Authority of Kenya – again partnered with Liquid Telecom to provide internet access for the first time to 46 branches of the Kenya National Libraries Service (KNLS). "The library service [was] one of the flagships of the government's Vision 2030 development strategy." The 46 KNLS branches to be connected were in 29 counties. Of the 29 counties, Liquid Telecom Kenya was already deploying commercial internet infrastructure in 26 of them. KNLS internet access was reported to be "free inside the libraries, which are free to enter for children under 14, and cost [USD 0.14] per visit for adults."[34]

In 2022, the government announced "plans to establish 25,000 free Wi-Fi hotspots across the country" in key business centres at public places "to spur the digital economy."[35] This is in line with Pillar 1 (digital infrastructure) of the Kenya National Digital Master Plan 2022-2032, launched in 2022.[36] The government "unveiled a pilot internet hotspot at the popular

30. Kenyan Times. (2021, 25 April). POA Internet Packages, Contacts and Coverage. https://kenyantimes.co.ke/2021/04/25/poa-internet-packages-contacts-and-coverage/
31. Mutuku, R. (2023, 1 December). Poa! Internet: Coverage, router, packages, and setting up. *Tuko News.* https://www.tuko.co.ke/facts-lifehacks/guides/529554-poa-internet-coverage-router-packages-setting-up/
32. Njanja, A. (2022, 18 January). Kenyan low-cost ISP Poa Internet secures $28 million in round led by AfDB-backed Africa50, plans to link region with cheap, limit-free connectivity. *TechCrunch*. https://techcrunch.com/2022/01/18/kenyan-low-cost-isp-poa-internet-secures-28-million-in-round-led-by-afdb-backed-africa50-plans-to-link-region-with-cheap-limit-free-connectivity/
33. Liquid Intelligent Technologies. (2016, 1 October). Free Wi-Fi hotspots continue to make their mark across Kenya. https://liquid.tech/free_wi_fi_hotspots_continue_to_make_their_mark_across_kenya/#:~:text=Liquid%20Intelligent%20Technologies%20Kenya%20has,in%20Nakuru%20County%20last%20year
34. IT News Africa. (2016, 30 May). Kenya: Libraries to offer free Internet to public. https://www.itnewsafrica.com/2016/05/kenya-libraries-to-offer-free-internet-to-public/
35. Wanzala, J. (2022, 3 December). State to set up 25,000 free Wi-Fi hotspots. *The Standard*. https://www.standardmedia.co.ke/business/business/article/2001462293/state-to-set-up-25000-free-wi-fi-hotspots
36. Ministry of ICT, Innovation and Youth Affairs. (2022) *The Kenya National Digital Masterplan 2022-2032*. https://cms.icta.go.ke/sites/default/files/2022-04/Kenya%20Digital%20Masterplan%202022-2032%20Online%20Version.pdf

City Market in the Nairobi central business district".[37] At the beginning of 2023, the information and communications technology (ICT) cabinet secretary Edwin Owalo announced that the government "intend[ed] to set up approximately 5,000 free public WiFi hotspots across the country" by the end of the year, and would "roll out 25,000 such centres by 2027. According to the [Cabinet Secretary], the government [would] collaborate with Google and local telco providers to commission the hotspots." In January 2023, Owalo said that "the State had so far launched 17 public hotspot centres across the country, targeting local businesses and underserved communities".[38] The initiative "received a boost [when in 2023] the World Bank Group agreed to offer Sh52 billion ($390 million) for the project in an effort to cut internet costs by 60 percent."[39]

BRCK (Moja)

BRCK, a Kenyan communications hardware startup, was founded in 2013[40] as a means of countering Kenya's notorious power failures with a ruggedised portable hotspot called BRCK v1. In 2017, expanding beyond WiFi hardware manufacturing, it launched a service called Moja, which offered free public WiFi, subsidised by commercial advertising partners. The Moja platform, combined with the SupaBRCK WiFi hardware (developed by BRCK), was designed to make internet access available to people who couldn't afford to pay by introducing an advertising-driven model. BRCK provided an integrated hardware and software service that included local content caching and compute capacity, as well as internet connectivity. Businesses bought content advertising or promotion on the Moja Network, which then subsidised the cost of the internet for the consumer. "In 2018, BRCK began offering SupaBRCK devices to drivers of Nairobi's [highly used] Matatu buses for Kenyan commuters to access Moja."

In 2019, BRCK acquired local ISP Surf, a hotspot service provider. At the time of this acquisition, BRCK claimed it had 300,000 users, while Surf had approximately 200,000 active customers across 22 cities in Kenya, bringing the total number of active customers up to 500,000.[41] BRCK's total combined WiFi access points came to 2,700 nodes after adding Surf's 1200 hotspots.[42]

BRCK also partnered with Facebook, who funded their capital expenditure to extend their network so that BRCK could make the Facebook Android app downloadable from their nodes. In 2021, BRCK also partnered with the German development cooperation agency Gesellschaft für Internationale Zusammenarbeit (GIZ) "to bring Moja free WiFi to Mathare Valley" through a mesh network, wherein residents "are able to access the internet at no direct cost [by performing] digital tasks on the Moja platform like watching an ad or filling out

37. Mwangi, K. (2022, 9 November). Kenya starts rollout of 25,000 free Wi-Fi hotspots to markets. *Business Daily Africa*. https://www.businessdailyafrica.com/bd/corporate/technology/city-market-gets-free-internet-hotspot-in-e-commerce-push-4014484
38. Citizen Digital. (2023, 10 January). Gov'T Set to Launch 5,000 Free Public Wi-fi Hotspots in 2023. *Citizen Digital*. https://www.citizen.digital/news/state-to-launch-5000-free-public-wi-fi-hotspots-in-2023-n312394
39. Muiruri, K., & Mwangi, K. (2023, 6 April). World Bank offers Sh52bn for 25,000 free Wi-Fi hotspots. *Business Daily Africa*. https://www.businessdailyafrica.com/bd/economy/world-bank-offers-sh52bn-for-25-000-free-wi-fi-hotspots--4187884
40. See: https://web.archive.org/web/20130620105609/http://brck.com/
41. Bright, J. (2019, 15 February). BRCK acquires ISPs EveryLayer and Surf to boost Africa's public Wi-Fi. *TechCrunch*. https://techcrunch.com/2019/02/15/brck-acquires-isps-everylayer-and-surf-to-boost-africas-public-wi-fi/
42. Matinde, V. (2019, 15 February). Kenya's BRCK acquires ISP Surf. *ITWeb Africa*. https://itweb.africa/content/DZQ58MVPb34vzXy2

a survey to earn Moja points that they can then use as credit to access the internet."[43]In total, BRCK received external funding amounting to $4.2 million (Sh677,422,000.00). The company shut down operations in 2021 "due to financial challenges occasioned mainly by COVID-19 shocks that disrupted business."[44] The BRCK website now points to a US company offering VoIP trunking services.[45]

Kenya Railways Cooperation

As of February 2024, "[t]he Kenya Railways Corporation is set to provide free public Wi-Fi at the various standard gauge railway (SGR) terminus", "including Nairobi, Mtito Andei, Mombasa, Voi, Athi River, Emali, Mariakana, Miasenyi, and Kibwezi" in order "to improve passenger experience".[46]

Government of Kenya (Jitume Digital Hubs)

In 2022, the Kenyan government announced a digital hubs initiative as part of its Digital Masterplan.[47] Known as Jitume Hubs, these centres have been established to facilitate business process outsourcing. As of March 2024, "[m]ore than 40 Jitume Hubs have been opened", with each hub having "up to 100 virtual desktop infrastructures with broadband access."[48]

Malawi

The Government of Malawi's free WiFi initiative was launched in October 2021 under the Digital Malawi Project, which is being implemented through the Public Private Partnership Commission in cooperation with the World Bank.

The initiative was "aimed at enhancing access to digital facilitates in Malawi in the midst of Covid19." The 32 sites selected for inclusion under this initiative include "Blantyre Secondary School, Mzuzu Government Secondary School, Nkhamenya Girls Secondary School, Bwaila Secondary School, Stella Maris Secondary School, Blantyre Market, Lilongwe Market, Mzuzu National Library, Queens Elizabeth Central Hospital, just to mention a few."[49]

In 2023, Malawian officials reported that "at least 500 public facilities [were] taking part in the government initiative to connect schools, courts, police stations, prisons, hospitals, markets and other public facilities and institutions to the internet, typically using Wi-Fi."[50]

43. Sharma, N., & Chole, L. (2021, 30 June). Digitizing Mathare Valley With Africa's Largest Mesh Network. *BRCK.* https://brck.com/digitizing-mathare-valley-with-africas-largest-mesh-network/
44. Silah, B. (2024, 30 January). Start-ups facing turbulence in Africa despite heavy funding. *K24 TV*. https://www.k24tv.co.ke/news/start-ups-facing-turbulence-in-africa-despite-heavy-funding-129517/
45. See: https://brck.com/index.html
46. Mwangi, K. (2024, 13 February). SGR stations to get free public Wi-Fi. *Business Daily Africa*. https://www.businessdailyafrica.com/bd/economy/sgr-stations-to-get-free-public-wi-fi--4523950
47. Chepkuto, I., & Omanga, N. (2022, 1 November). Government unveils plans for free Internet hotspots. *Kenya News Agency*. https://www.kenyanews.go.ke/government-unveils-plans-for-free-internet-hotspots/
48. Macharia, M. (2024, 13 March). Kenya accelerates rollout of digital hubs. *ITWeb Africa*. https://itweb.africa/content/lwrKxv3YxNYMmg1o
49. Public Private Partnership Commission. (2021, 12 October). Government Launches Public Free WI-FI. https://pppc.mw/news/government-launches-public-free-wi-fi
50. Sanderson, S. (2023, 14 October). Malawi: Free internet in public facilities. *DW News*. https://www.dw.com/en/malawi-makes-internet-in-public-facilities-free/a-67092037

Nigeria

Airtel

In 2015, Airtel launched its public WiFi service in Lagos to users "irrespective of their network", offering 15 minutes per month free to every user. Airtel announced that the WiFi hotspots had been deployed at Ozone Cinema, Yaba, Silverbird Galleria, Victoria Island and Alausa Shopping Mall, Ikeja. They further claimed that the hotspots would subsequently be deployed at malls, airports, universities and other areas of public interest in other major cities.[51] Users were able to purchase data bundles by time ranging from 30 minutes to 5 hours. Non Airtel subscribers could use Airtel recharge cards and debit cards while Airtel subscribers could purchase WiFi time bundles with their airtime.[52]

Lagos State Government

In 2017, the Lagos State Government partnered with MainOne (a West African digital infrastructure service provider) and an unnamed Nigeria telecommunications company to launch a free public WiFi project at parks and gardens in Lagos, Nigeria. The launch of the project was announced on the 12th of May at Ndubisi Kanu Park, Alausa, Ikeja, during the 50th year anniversary celebrations of the creation of the State. The news of the launch reported the roll out of free public WiFi in Lagos was made possible because of the investment made by MainOne in fibre-optic infrastructure in Lagos State.[53]

21st Century Technologies (Google Station)

In 2018, Google Station, a public WiFi service by Google, was launched in Nigeria, in partnership with 21st Century Technologies; a Nigerian fibre network provider. It was reported that Google would partner with local service providers for infrastructure and locations while it offers a cloud-based platform and devices to provide and manage hot-spots. Planned Google Station locations included high footfall areas such as malls, airports and schools. At the time of the reporting, the service was already live in four locations in Lagos (the Landmark Centre, The Palms Mall, Ikeja Mall, MMA2 Domestic Airport Terminal,

all in Lagos State) and was forecast to expand to 200 locations across five additional Nigerian cities; Port Harcourt, Abuja, Kaduna, Enugu, Ibadan by the end of 2019.[54]

Google planned to monetise their service through partnerships with local advertisers and share revenues with their technical partners.[55] A year after the launch of Google Station, local news reported that it had stopped functioning in the University of Lagos (Unilag) and at

51. Staff Writer. (2015, 19 June). Nigeria: Airtel rolls out Wi-Fi Service in Lagos. *IT News Africa*. https://www.itnewsafrica.com/2015/06/nigeria-airtel-rolls-out-wi-fi-service-in-lagos/
52. Anderson, M. M. (2015, 6 July). Airtel Brings Wireless Internet Access to Lagos, Nigeria. *The Borgen Project.* https://borgenproject.org/airtel-brings-wireless-internet-access-lagos-nigeria/
53. IT News Africa. (2017, 15 May). Free Wi-Fi in Lagos Now Available. *IT News Africa*. https://www.itnewsafrica.com/2017/05/free-wi-fi-in-lagos-now-available/
54. Ekwealor, V. (2018, 25 July). Google Station Free WiFi Launches in Nigeria, and Other Announcements. *Techpoint Africa.* https://techpoint.africa/2018/07/26/google-launches-google-station-nigeria-with-other-announcements/
55. Kazeem, Y. (2022, 20 July). Google Is Boosting Internet Access in Nigeria's Biggest Cities With Free Public WiFi. *Quartz*. https://qz.com/africa/1336361/google-is-boosting-internet-access-and-its-bottom-line-with-free-public-WiFi-in-nigeria

two other primary Google Station locations in Lagos (Ikeja City Mall (ICM) and the Computer Village).[56] Google Station was subsequently closed down in 2020.

Tizeti (Free, Express WiFi)

Tizeti, a Nigerian technology company which has built out its own solar-powered network of towers across Lagos, closed a USD 2.1M seed round of funding in June 2017. The company announced it would use the funding to continue building its solar-powered outdoor WiFi infrastructure and support the launch of 3,000 new public WiFi hotspots across Lagos. Tizeti has cited interference as one of the big challenges to their service, affecting the quality of connection. To address this problem, Tizeti has since purchased licensed spectrum from the Nigerian government.[57] In 2022, Tizeti was reported to have over 3,884 hotspot locations in Nigeria.[58]

In 2017, Tizeti and Facebook announced a partnership to expand Facebook's public WiFi hotspot service, Express WiFi, using affordable internet through Tizeti's WiFi technology, with plans to roll out hundreds of hotspots. Express WiFi plans ranged from N50 for 100MB to N2,000 for 10GB.[59]

Fiam WiFi

Fiam WiFi, a Nigerian ISP, began its operations in September 2019 by piloting a public WiFi initiative in Lagos to provide affordable and reliable internet connectivity. Fiam deployed public WiFi access points beginning with 25 hotspots in Ajegunle, a suburb of Lagos. The company has also partnered with the local government in Ajegunle to set-up WiFi hotspots in every primary school. The pricing starts at $1 (N400) for 1GB with no expiration period.[60]

Akin Marinho, CEO & founder of Fiam reported that their revenue is about $3 US dollars per WiFi hotspot per day or about $100 US dollars per hotspot per month.[61]

Rwanda

Rwandan Government (Smart City Masterplan)

Rwanda's first free public WiFi initiative, the Smart Kigali project began in late 2013.[62] It was a joint initiative of the City of Kigali, various ministries, the regulator, and telecommunications operators. The initiative was subsequently integrated into Rwanda's Smart City Masterplan developed in 2017. The masterplan provided a framework to guide Rwandan cities and

56. Ekwealor, V. (2019, 26 September). Google Station, Google's free WiFi is offline in Lagos. *Techpoint Africa*. https://techpoint.africa/2019/09/27/google-station-free-wifi-offline-lagos/
57. Nsehe, M. (2017, 26 June). "Nigerian Tech Startup Tizeti Secures $2.1M to Bring Affordable Wireless Internet to Africa." *Forbes.* https://www.forbes.com/sites/mfonobongnsehe/2017/06/26/nigerian-tech-startup-tizeti-secures-2-1m-to-bring-affordable-wireless-internet-to-africa/
58. O'Grady, V. (2022, 9 August). Tizeti plans West African expansion. *Developing Telecoms*. https://developingtelecoms.com/telecom-business/13855-tizeti-plans-west-african-expansion.html
59. Monzon, L. (2020, 25 March). Fiam WiFi Plans to Bring Affordable, Reliable Internet to Lagos. *IT News Africa*. https://www.itnewsafrica.com/2017/11/africacom-2017-tizeti-and-facebook-to-expand-wi-fi-express-in-nigeria/
60. Ibid.
61. Hetting, C. (2020, 19 August). Connectivity in Lagos: Thousands of Wi-Fi hotspots Is the answer, says Fiam. *Wi-Fi NOW Global*.https://WiFinowglobal.com/news-and-blog/connectivity-in-lagos-nigeria-thousands-of-wi-f-hotspots-is-the-answer-says-fiam/
62. Atieno, M. (2014, 1 March). Free Wi-Fi Program Dubbed Smart Kigali Enhancing Rwanda's Productivity. *Innov8tiv.* https://innov8tiv.com/free-WiFi-program-dubbed-smart-kigali-speeding-rwandas-development/

towns in their efforts to harness ICTs to provide a higher quality of life to their citizens, businesses and visitors, and to transform Rwanda from an agrarian economy into a knowledge-based society by 2020.[63]

Under the Smart City Masterplan, the Kigali Smart Bus Project fitted Public buses in Kigali with free WiFi devices from the AC group (a local ICT technology firm providing smart transport solutions in Rwanda and across Africa).[64] The buses are connected via the national LTE network built by Korea Telecom (KT). The initiative attracted some criticism with regards to connectivity related to the Korea-built technology's inability to adapt to local conditions.[65]

Free WiFi access points are also available at Union Trade Center, Kigali City Tower, Kigali City Market, MTN Center, Nyabugogo Bus Park, Remera-Kisementi, Stade Amahoro, Kigali Public Library, Kanombe International Airport, KBC, Kacyiru Ministere, KIST and KIE.[66] Backers of the project include Rwanda's Ministry of Youth and ICT (MYICT), the City of Kigali in partnership with Rwanda Development Board (RDB), Rwanda Utilities and Regulatory Agency (RURA), Rwanda Hotel and Restaurant Association and an unnamed telecoms operator.

In 2020, the City hall garden, which is a public space, was connected with free public WiFi provided by Liquid Telecom.[67]

ARED (Solar WiFi)

African Renewable Energy Distributor (ARED), a mobile solar kiosk company, now turned connectivity solutions provider, has introduced a new kiosk which in addition to offering charging and virtual top-up services for mobile phones, now provides WiFi. The cost of internet access varies depending on how long users wish to browse the web and has cached digital content on board such as music, news, and information on health and education which passersby can access for free.[68]

South Africa

South Africa was an early adopter of public WiFi. As early as 2005, the city of Knysa in the Eastern Cape was offering free public WiFi access through a local wireless ISP called UniNet.[69] However, this initiative remained the exception to the rule until 2013.

63. Rich, R., Westerberg, P., & Torner, J. (2017). *Smart City Rwanda: Masterplan*. UN Habitat. https://unhabitat.org/smart-city-rwanda-master-plan
64. Ekwealor, V. (2016, June 6). Rwanda debuts smart buses with 4G WiFi and cashless payment. *Techpoint Africa*. https://techpoint.africa/2016/06/07/rwandan-smart-buses/
65. Siba, E., & Sow, M. (2017, 1 November). Smart City Initiatives in Africa. *Brookings*. https://www.brookings.edu/articles/smart-city-initiatives-in-africa/
66. Mzekandaba, S. (2013, 23 September). Free Wi-Fi for Rwanda's Kigali. *ITWeb Africa.* https://itweb.africa/content/JN1gPvO1NpaMjL6m
67. https://twitter.com/CityofKigali/status/1280762971837382656
68. Probyn, J. (2017, 10 February). Rwandan solar-powered kiosk company wants to create Africa's biggest wifi network. *How we made it in Africa*. https://www.howwemadeitinafrica.com/rwandan-solar-powered-kiosk-company-wants-create-africas-biggest-WiFi-network/57548/
69. Perkins, M. (2016). Knysna Open Access Network Case Study. *UniNet Communications.* https://silo.tips/download/knysna-open-access-network-case-study-prepared-by-uninet-communications

Project Isizwe

In 2013, a non-profit organisation called Project Isizwe announced a partnership with the City of Tshwane.[70] The city contracted with Project Isizwe to deploy and operate WiFi hotspots, known as Tshwane Free Wi-Fi, across the municipality. In 2017, the organisation came under criticism for its high cost of network deployment and operation.[71] While the city continues to provide free WiFi services, it transitioned to a new service provider in 2018.[72] Project Isizwe subsequently experimented with an advertising-based revenue model but without success.[73] In 2022, the organisation experimented with a cryptocurrency partnership and the development a Fibre-to-the-Home business.[74] [75] In 2023, its focus shifted again to a focus on providing internet access to schools via WiFi.[76]

City of Cape Town

Around the same time that Project Isizwe began in Tshwane, the City of Cape Town was undertaking an ambitious project to commission its own Open Access municipal fibre optic network. Building on this work, the city developed an initiative to deploy free public WiFi hotspots throughout the city and in surrounding townships. The city's Open Access model meant that any licensed ISP could leverage the WiFi infrastructure. The WiFi infrastructure was deployed through partnerships with various service providers in the Western Cape.

Research ICT Africa (RIA), a South African think tank, carried out a comparative analysis of the City of Cape Town's and Project Isizwe's approaches in a 2017 report.[77] The visible success of these public WiFi initiatives led to funding from the national government which was subsequently channelled to several municipalities in 2016.[78]

National Government

In 2024, the South African government announced its target of connecting 5.5 million households in townships and rural areas with WiFi, with plans to involve 76 ISPs, most of which are small, medium and micro enterprises. This is part of the initiatives under the SA Connect broadband connectivity project, which is an implementation of the National Broadband Policy of 2015 "dedicated to bridging the digital divide by providing WiFi access to communities and ensuring universal access to the internet."

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70. Akabor, N. (2013, 26 November). Op. cit.
71. Muller, R. (2017, 27 June). Tshwane Free Wi-Fi; the true story. *MyBroadband*. https://mybroadband.co.za/news/broadband/217094-tshwane-free-wi-fi-the-true-story.html
72. Mzekandaba, S. (2018, 6 February). Tshwane spends big to keep citizens connected. *ITWeb*. https://www.itweb.co.za/article/tshwane-spends-big-to-keep-citizens-connected/Pero37Zg8xKMQb6m
73. Simons, H. (2017, 7 September). Here's how municipalities should do free WiFi – Project Isizwe. *Memeburn*. https://memeburn.com/2017/09/project-isizwe-free-wifi-municipalities/
74. Mungadze, S. (2022, 26 October). Project Isizwe taps crypto to monetise township WiFi. *ITWeb*. https://www.itweb.co.za/article/project-isizwe-taps-crypto-to-monetise-township-wifi/KzQenvjyykRqZd2r
75. BizNews.com. (2022, 8 November). How Isizwe is going to give fast, affordable fibre to townships. https://www.biznews.com/good-hope-project/2022/11/08/isizwe-fibre-townships
76. Brederode, W. (2023, 4 October). Non-profit turning a profit selling R5 uncapped internet packages in Durban. *News24*. https://www.news24.com/news24/tech-and-trends/news/non-profit-turning-a-profit-selling-r5-uncapped-internet-packages-in-durban-20231004
77. Geerdts, C., Gillwald, A., Calandro, E., Chair, C., Moyo, M., & Rademan, B. (2017). *Developing Smart Public Wi-Fi in South Africa*. Research ICT Africa. https://www.researchictafrica.net/publications/Other_publications/2016_Public_Wi-Fi_Policy_Paper_-_Developing_Smart_Public_Wi-Fi_in_South_Africa.pdf
78. https://docs.google.com/presentation/d/1bwpAzGbetiSCv9GdKaMWOI1SXelmRR2iABzz1AIgKWo/edit#slide=id.p9

The project has been divided into 2 phases, with phase 2 aiming to "provide core and access network infrastructure, to enable broadband connectivity to community WiFi hotspots that will connect households." The Department of Communications and Digital Technologies planned to connect 882,000 households as part of the broadband plan in the 2023/24 financial year and is planning to connect 3.8 million households during the 2024/25 financial year and a total target of 5.5 million households enabled by WiFi hotspots in the next three to four years. The Minister of communications and digital technologies announced the government will connect 1.5 million households enabled by WiFi hotspots by December 2024, and 747,000 households enabled by 4,250 WiFi hotspots by the end of this financial year. He reported that so far, 361,000 households have been enabled by 2,502 WiFi hotspots.[79]

Platform Initiatives

South Africa has also been an attractive destination for connectivity initiatives from large digital platforms although notably later than many other African countries. In 2019, Facebook/Meta announced a partnership with mobile network operator Cell C and WiFi manufacturer Cambium to roll-out its Express WiFi project.[80] Later the same year, Google announced is Google Station initiative,[81] partnering with South African wireless ISP Think WiFi to target 125 WiFi hotspots across Cape Town.[82] In 2022, TikTok announced a project to deploy 50 free WiFi hotspots across South Africa.[83] Google abandoned the Google Station initiative in 2020, although their partner Think WiFi has continued the service. In 2022 Facebook closed the Express WiFi initiative.

Tanzania

The Tanzania government first announced free public WiFi services in public and recreational places in Dar es Salaam in 2016.[84] They were to be implemented by the state-owned telecommunications operator Tanzania Telecommunications Corporation (TTCL), which also operates the National ICT Broadband Backbone (NICTBB). Little more was said about public WiFi until 2023, which saw a number of government announcements of public WiFi services. Those from the Tanzania Telecommunications Regulatory Authority (TCRA) confirmed that, once again, public WiFi services would be provided by TTCL. This time national parks and other public places including Benjamin Mkapa Stadium, universities,[85]

79. Moyo, A. (2024, 15 February). 5.5m rural, township households to get WiFi, says minister. *ITWeb*. https://www.itweb.co.za/article/55m-rural-township-households-to-get-WiFi-says-minister/wbrpO7g2p8pvDLZn
80. MyBroadband. *(2019, 28 February). Facebook Express Wi-Fi to launch in South Africa*. https://mybroadband.co.za/news/wireless/297760-facebook-express-wi-fi-to-launch-in-south-africa.html
81. McLeod, D. (2019, 7 November). Google launches free public Wi-Fi initiative in South Africa. *TechCentral*. https://techcentral.co.za/google-launches-free-public-wi-fi-initiative-in-south-africa/180503/
82. More about Google and Facebook's free WiFi initiatives can be found in the last section of this document.
83. TechCentral. (2022, 8 September). TikTok-branded free Wi-Fi hotspots launched in South Africa. https://techcentral.co.za/tiktok-branded-free-wi-fi-hotspots-launched-in-south-africa/215041/
84. Hakipensheni. (n/d). Dar Residents to Enjoy Free Wi-Fi in Public, Recreational Areas. https://web.archive.org/web/20180203011537/http://hakipensheni.co.tz/2016/10/dar-residents-to-enjoy-free-wi-fi-in-public-recreational-areas/
85. Takwa, E. (2023, 10 August). President wants all Tanzanian varsities get free access to Wi-Fi. *Daily News.* https://dailynews.co.tz/president-wants-all-tanzanian-varsities-get-free-access-to-wi-fi/

and the Institute of Finance Management were mentioned.[86] Other places specifically mentioned included Tabora Market, the Nanenane Bus Stand in Dodoma; the Buhongwa ward in Mwanza, Kiembe Samak in Unguja, and the University of Dodoma.[87]

Uganda

Government of Uganda (MyUG)

Free public WiFi was first announced in 2016 by the Ugandan government.[88] By 2019, the government claim to have 284 MyUG locations within Kampala, Wakiso and Entebbe, up from 164 in 2018.[89] The government planned to bring that total to 500 WiFi hotspots within a year.[90] The service offered unlimited internet access at 2Mbps, although users are obliged to re-login after 30 minutes of use.[91] Free use was limited from from 6PM until 6AM on weekdays and 3PM to 6AM on weekends in order to prioritise private users during the day.[92]

In 2019, Airtel announced that it would sponsor free WiFi at the public library in the town of Jinja, with plans to expand to 18 other libraries in the country.[93] In 2020, the government announced plans to offer free WiFi at 5 major border posts, including Mutukula (Kyotera); Vurra (Arua); Malaba (Tororo); Elegu (Amuru); Bunagana (Kisoro).[94]

The government subsequently announced ambitious plans to install 2000 WiFi hotspots across Uganda in every location where the government's national backbone infrastructure exists.[95] At the time of the announcement, the government stated they had installed 300 WiFi hotspots already in regional cities and another 300 in Kampala.[96]

86. Chuwa, H. (2023, 7 December). TTCL to provide free Wi-Fi to more public, tourist areas. *Daily News*. https://dailynews.co.tz/ttcl-to-provide-free-wi-fi-to-more-public-tourist-areas/
87. Takwa, E. (2023, 11 April). Tanzania restates plans to install free Wi-Fi in public places. *Daily News.* https://dailynews.co.tz/tanzania-restates-plans-to-install-free-wi-fi-in-public-places/
88. New Vision. (2016, 13 September). Govt to offer free internet for Kampala, Entebbe. https://www.newvision.co.ug/new_vision/news/1435155/govt-offer-free-internet-kampala-entebbe
89. Kasemiire, C. (2019, 4 June). Uganda: Where Is Kampala's Free Wireless Internet? *AllAfrica. https://allafrica.com/stories/201906040154.html* https://allafrica.com/stories/201906040154.html
90. Ecofin Agency. (2019, 7 June). Uganda: NITA-U to add 216 additional free wireless internet access points in the next six months. https://www.ecofinagency.com/telecom/0706-40142-uganda-nita-u-to-add-216-additional-free-wireless-internet-access-points-in-the-next-six-months
91. Bambino, R. (2016, 25 October). 10 Things you must know about the Government's free WiFi hotspot service. *Techjaja*. https://techjaja.com/10-things-must-know-governments-free-wifi-hotspot-service/
92. Wandati, M. (2021, 18 August). Free internet users in Uganda baffled with restricted access to MyUG Wi-Fi. *Kampala Dispatch*. https://www.dispatch.ug/2021/08/18/free-internet-users-in-uganda-baffled-with-restricted-access-to-myug-wi-fi/
93. Mandela, N. (2019, 27 June). Airtel provides free unlimited WiFi to Jinja public library, to connect more 18 in Uganda. *PML Daily*. https://www.pmldaily.com/business/2019/06/airtel-provides-free-unlimited-wifi-to-jinja-public-library-to-connect-more-18-in-uganda.html
94. Pat, M. (2020, 13 August). UCC Launches WiFi Hotspot Project in 5 Major Border Posts. *The Kampala Post.* https://kampalapost.com/content/ucc-launches-WiFi-hotspot-project-5-major-border-posts
95. Murungi, P. (2022, 23 August). Govt to install 'free' Wi- Fi hotspots across Uganda. *Monitor*. https://www.monitor.co.ug/uganda/business/technology/govt-to-install-free-wi-fi-hotspots-across-uganda--3923234
96. African Wireless Communications. (2022, 6 October). Uganda gains 600 free WiFi hotspots. https://www.africanwirelesscomms.com/news-details?itemid=5069

Some users have expressed concern about the level of personal data required to register to use the MyUG hotspots and the lack of transparency in how user data was being handled.[97]

Roke Telkom (Express WiFi)

In 2020, ISP Roke Telkom partnered with Facebook's Express WiFi program, offering FreeBasics, a limited zero-rated platform for internet access on their 600 hotspots across the country.[98]

Roke Telkom (Project Hello World)

Also in 2020, Roke Telkom partnered with the non-governmental organisation (NGO) Hello World to offer free WiFi hotspots across Uganda.[99] Hello World works with remote communities to enable them to make their own outdoor, solar-powered, internet connected public hubs. At the beginning of 2023 there were 41 Hello World hubs in underserved areas in Uganda offering free WiFi.[100] By September of that year, this number had risen to 63.[101]

Battery Operated System for Community Outreach (BOSCO)

In northern Uganda, BOSCO has been providing free WiFi access to those affected by conflict in the region for over 10 years.[102] BOSCO Uganda is a not-for-profit organisation under the trusteeship of the Catholic Archdiocese of Gulu. It was founded in 2007 as an intervention to support the internally displaced people's (IDP) camps of northern Uganda in the aftermath of the Lord's Resistance Army war. BOSCO Uganda offers internet connectivity, solar installation, ICT training and capacity building. They have established 55 ICT centres across different communities in northern Uganda that are used as learning centres and information hubs.[103]

97. Monitor. (2016, 4 October). Activists query free government internet, demand data protection law. https://www.monitor.co.ug/uganda/news/national/activists-query-free-government-internet-demand-data-protection-law-1669794
98. Strub, C. (2020, 15 January). WiFi-Enabled 'Hello Hubs' Bring Internet to Underserved Communities in Uganda. *Forbes.* https://developingtelecoms.com/telecom-technology/wireless-networks/10133-roke-and-facebook-bring-affordable-internet-access-to-uganda.html
99. Ibid.
100. Hello World. (2023). *Hello World: Our Impact Performance.* https://assets-global.website-files.com/63bc17aa0bfa7a2322ea778b/64d4e2311e74bea9f1dbf934_Hello%20World%20Impact%20Report.pdf
101. The Independent. (2023, 30 September). Hello World: ISPs hold the key to empowering underserved communities. https://www.independent.co.ug/hello-world-isps-hold-the-key-to-empowering-underserved-communities/
102. Lidman, M. (2018, 6 January). Church provides internet in northern Uganda, connects more than computers. *National Catholic Reporter*. https://www.ncronline.org/news/church-provides-internet-northern-uganda-connects-more-computers
103. BOSCO Uganda. (2021, 10 March). *FAQ's - BOSCO Uganda*. https://www.boscouganda.com/boscouganda-faqs/

Zimbabwe

Public WiFi services in Zimbabwe are dominated by TelOne (a parastatal telecommunications company owned by the Government of Zimbabwe) and ZOL (an ISP recently rebranded as Liquid Home Zimbabwe). Other public WiFi providers include NetOne[104] (a cellular network operator), Telco[105] (an internet service provider), and Africom (a converged communication service provider). All the providers are offering paid public WiFi services. In 2015, it was reported that ZOL had over 200 hotspots across the country.[106]

ZOL began by offering free access to its public WiFi but later started charging USD 15 for 5 GB of data with a validity of 30 days, then switched to an advertising driven model by having users watch adverts after which they get 50 MB or 30 minutes of use.[107] In 2021, however, ZOL reported that it has discontinued the free 30 minutes of internet access and users would have to buy a voucher to access the internet at its ZOLspots.[108]

In 2015, state owned TelOne introduced Metro WiFi Service, a public WiFi service which was deployed in 10 cities.[109] Later that year, TelOne entered into a partnership with Innscor to provide WiFi from Innscor outlets (Chicken Inn, Bakers Inn, Creamy Inn, Fish Inn) across the country. This led to the establishment of more than a hundred new hotspots. Innscor has up to 195 outlets across Zimbabwe.[110] TelOne offered users 1 GB of data for USD 1 valid for 24 hours.[111]

104. Gambanga, N. (2016, 19 July). NetOne extends broadband services introduces a public WiFi option. *Techzim*. https://www.techzim.co.zw/2016/07/netone-extends-broadband-services-introduces-public-WiFi-option/
105. Gambanga, N. (2015, 8 May). Local IAP Telco rebrands, offers WiFi hotspot access at 50c & a $35 home package. *Techzim*. https://www.techzim.co.zw/2015/05/local-iap-telco-rebrands-offers-WiFi-hotspot-access-at-50c-a-35-home-package/
106. Gambanga, N. (2015, 4 June). Looking for WiFi Locally, here are the hotspots. *Techzim*. https://www.techzim.co.zw/2015/06/looking-for-WiFi-locally-here-are-the-hotspots/
107. Kabweza, L. S. M. (2015, 24 September). ZOL WiFi now free-ish. Should Innscor get into the WiFi business? *Techzim.* https://www.techzim.co.zw/2015/09/zol-WiFi-now-free-ish-should-innscor-get-into-the-WiFi-business/
108. Muhamba, V. (2021, 9 March). ZOL ends free 30-minute ZOLspot access. *Techzim.* https://www.techzim.co.zw/2021/03/zol-ends-free-30-minute-zolspot-access/
109. Gambanga, N. (2015, 9 April). TelOne launches its $36 Fibre to the Home service along with WiFi hotspots. *Techzim*. https://www.techzim.co.zw/2015/04/telone-launches-its-fibre-to-the-home-service-along-with-WiFi-hotspots/
110. Mukandatsama, V. (2015, 24 August). Telone introduces WiFi at Innscor Outlets. *Techzim*. https://www.techzim.co.zw/2015/08/telone-introduces-WiFi-at-innscor-outlets/
111. Gambanga, N. (2016, 31 January). TelOne launches public WiFi promo, offers 1GB for $1. https://www.techzim.co.zw/2016/01/telone-launches-public-wifi-promo-offers-1gb-1/

Asia and the Pacific

Asia and the Pacific have a history of public WiFi initiatives going back twenty years. They have ranged in scale from single access points in remote villages in Nepal through to hundreds of thousands of access points in India. Most have had some degree of public good in mind, but the rationales for these initiatives have varied significantly across economies and projects.

Azerbaijan

Bakatelecom (Baku loves you)

First conceived in 2016 by Azerbaijan's Ministry of Communications and High Technologies,[112] the "Baku loves you" free WiFi project aimed to provide free internet access to residents and guests of the country's capital in places where people congregate in large numbers.[113] The service was implemented and operated by state-owned Bakatelecom. In the five years prior to the initiative, mobile broadband subscriptions in Azerbaijan had grown from approximately 7% to 60% of the population,[114] which may have put some strain on the country's data networks. A news report celebrating the expansion of the network in 2017 cites a million connections to the new network, which was built in places of mass congestion.[115]

Over a period of six years the initiative grew to 122 hotspots across parks and public spaces in Baku, with a significant focus on outdoor spaces. In 2022, coinciding with the planned merger of Bakatelecom with Aztelekom, another state-owned company,[116] WiFi coverage was scaled back significantly, eliminating service in all areas except those with highest demand for Baku.[117]

Bangladesh

Link3 and Robi Axiata (Express WiFi)

In 2020 a multi-year plan for 10,000 WiFi hotspots co-located with educational institutions in remote areas of Bangladesh was shelved. After extensive planning and lobbying the program failed to achieve regulatory approval.[118] The planned project would have combined the strengths of fixed line ISP Link3's network infrastructure with the large customer base of

112. Report News Agency. (2016, 22 August). Baku launches public Wi-Fi project. https://report.az/en/ict/baku-launches-public-wi-fi-project/
113. Mehdiyev, M. (2017, 3 October). "Baku Loves You" Gets into a Wider Coverage. *Caspian News.* https://caspiannews.com/news-detail/baku-loves-you-gets-into-a-wider-coverage-2017-9-28-33/
114. https://datahub.itu.int/data/?e=AZE&c=716&i=11632&u=per+100+people
115. Shirinov, R. (2017, 27 September). Free Wi-Fi reaches another park of Baku. *AzerNews*. https://www.azernews.az/nation/119574.html
116. Ali, K. (2022, 20 April). Plans to merge state-owned Baktelecom with Aztelekom affected the financial statements of the former. *Turan.* https://turan.az/en/economics/plans-to-merge-state-owned-baktelecom-with-aztelekom-affected-the-financial-statements-of-the-former
117. Turan. (2022, 29 June). Public Wi-Fi service suspended in most places in Baku. https://turan.az/en/social/public-wi-fi-service-suspended-in-most-places-in-baku. https://turan.az/en/social/public-wi-fi-service-suspended-in-most-places-in-baku
118. Islam, M. Z. (2020, 10 January). FB, Robi drop plan to set up 10,000 WiFi hotspots. *The Daily Star.* https://www.thedailystar.net/business/facebook-robi-drop-plan-to-set-up-10000-WiFi-hotspots-in-bangladesh-1852177

mobile operator Robi. Facebook's contribution, Express WiFi, was aimed at helping Robi monetise the WiFi access points through app-based sale of data.

Several factors are likely to have contributed to the failure of the project. Robi, the country's second largest operator,[119] and Facebook were both involved in taxation disputes with the regulator. The Bangladeshi government was also concerned that they would be unable to monitor content and control the WiFi hotspots when they wanted to shut the internet down.[120]

While the Express WiFi platform offered carriers a path to offering sustainable WiFi services at scale, Facebook shut it down in February 2022.[121]

Bangladesh Computer Council and Huawei (Digital Sylhet City)

A smart city initiative started in Sylhet, Bangladesh kicked off in 2018. It was meant to bring free WiFi to the city centre along with facial recognition surveillance cameras to detect crime.[122] The genesis of the project was an election pledge made by a local politician who later held multiple high level positions in the national government, including foreign minister.[123] WiFi was installed in 126 access points across the city by a central government authority called the Bangladesh Computer Council (BCC),[124] with activation scheduled for

March 2020. After its implementation and a year of operation, BCC handed the project over to the City Corporation for ongoing operation.

Damage to equipment, problems with the WiFi, and the expiry of software licences have plagued the project.[125] A significant complication was a lack of city budget, resulting in an inability to pay operational expenses to internet suppliers. When suppliers were not paid, upstream connectivity was cut off, leaving users unable to access the internet.

A second smart city initiative under the Digital Sylhet City project was built in Cox's Bazar, a coastal city around 500 km to the south. This project, and its 74 access points in 35 zones, was handed over to the local authority in 2022. While free WiFi is a key component of the system, access to e-government services is emphasised by the project.[126]

Cambodia

Ministry of Post and Telecommunications (Free Public WiFi)

A relatively late adopter of free public WiFi, the Cambodian government began several projects in 2023. They first installed 16 hotspots in Siem Reap for use during Angkor

119. https://www.amtob.org.bd/home/industrystatics
120. Islam, M. Z. (2020, 10 January). Op. cit.
121. Slater-Robins, M. (2022, 2 February). Meta is shutting down its Express Wi-Fi service. *TechRadar*. https://www.techradar.com/news/meta-is-shutting-down-its-express-wi-fi-service
122. Chowdhury, D. (2022, 22 October). Sylhet far from a digital city. *The Daily Star*. https://www.thedailystar.net/news/bangladesh/news/sylhet-far-digital-city-3148731
123. The Business Standard. (2020, 22 March). Sylhet to become Bangladesh's first Wifi city next week. https://www.tbsnews.net/tech/sylhet-become-bangladeshs-first-wifi-city-next-week-59575
124. https://bcc.gov.bd/site/page/01cbf22a-b9f5-4a67-829e-55c27ab216f6/-
125. Chowdhury, D. (2022, 22 October). Op. cit.
126. Dhaka Tribune. (2022, 8 February). BCC hands over public wi-fi zone under 'Digital Sylhet City Project' to CoxDA. https://www.dhakatribune.com/business/263459/bcc-hands-over-public-wi-fi-zone-under-%E2%80%98digital

Sangkran, a celebration of Khmer New Year.[127] These hotspots remained open for use by tourists after the conclusion of the holiday.[128] Through the organising committee for the South East Asian Games, the government spent USD 500,000 to install WiFi in the two stadiums hosting events.[129] Later in 2023 they announced plans to install WiFi in the Preah Sihanouk province to support residents and visitors, and to help grow the nation's digital technology sector.[130] These hotspots were delivered at the end of 2023, located at two popular beaches.[131]

Fiji

Walesi (digitalFIJI WiFi)

In 2018 the Fijian government announced a free public WiFi project and assigned its state-owned broadcast company, Walesi, a budget of FJD$ 40 million (USD 18 million) for the task.[132] The project's main intention was to ensure access to the internet for Fijian youth.[133] Throughout 2018 launch events were held as access points were turned on in eight public parks and markets around the country.[134] Events sometimes coincided with the distribution of free set-top boxes, which allowed households with older televisions to access digital TV channels offered by the state broadcaster.[135] The use of the free service has been a concerned opposition politicians, who claim it has been used by children to watch pornography in public.[136] In response, Walesi announced that their WiFi services were filtered for adverse content, including pornography. The latest addition to the network is Lautoka Market, which was brought online in November 2022 at a launch event that included Walesi installing TV sets in various places across the market to allow vendors to watch significant events and rugby matches.[137]

127. *Chandara, S. (2024, 1 January).* Ministry offers public Wi-Fi to boosts tourism. *The Phnom Penh Post.* https://www.phnompenhpost.com/national/ministry-offers-public-wi-fi-to-boosts-tourism
128. Khmer Times. (2023, 18 April). Tourists can still use free public Wi-Fi after Angkor Sankranti. https://www.khmertimeskh.com/501275190/tourists-can-still-use-free-public-wi-fi-after-angkor-sankranti/
129. Khmer Times. (2023, 3 May). Cambodia spends $500,000 to install free public Wi-Fi at SEA Games' stadiums. https://www.khmertimeskh.com/501283891/cambodia-spends-500000-to-install-free-public-wi-fi-at-sea-games-stadiums/
130. Narayan, S. (2023, 28 May). Cambodia to Install Free Public Wi-Fi in Coastal Areas of Preah Sihanouk Province. *The Better Cambodia.* https://thebettercambodia.com/cambodia-to-install-free-public-wi-fi-in-coastal-areas-of-preah-sihanouk-province/
131. Ibid.
132. Kate, T. (2018, 15 September). Free WiFi access at Sigatoka. *The Fiji Times.* https://www.fijitimes.com.fj/free-wifi-access-at-sigatoka/
133. Fiji Launches its First Free Public WiFi Hot Spot. (2018, 31 July). *Tech In Pacific*. https://www.techinpacific.com/fiji-launches-its-first-free-public-wi-fi-hot-spot/
134. Kate, T. (2018, 6 October). Free WiFi hotspot launched in Ba. *The Fiji Times*. https://www.fijitimes.com.fj/free-wifi-hotspot-launched-in-ba/
135. Chambers, C. (2018, 30 September). 3000 People Attend Launch of Free WiFi Zone in Lautoka. *Fiji Sun.* https://www.pressreader.com/fiji/fiji-sun/20180930/281492162251244
136. Begum, F. (2018, 1 November). Free Walesi WiFi hotspots around Fiji are filtered for adverse content including porn – Acting Walesi CEO. *Fijivillage.* https://www.fijivillage.com/news/Free-Walesi-WiFi-hotspots-around-Fiji-are-filtered-for-adverse-content-including-porn---Acting-Walesi-CEO-r25ks9/
137. *Kumar, R. (2022, 19 November).* Free Wi-Fi and digital TV launched at Lautoka Market. *Fijivillage.* https://www.fijivillage.com/news/Free-WiFi-and-digital-TV-launched-at-Lautoka-Market-xf54r8/

India

RailTel and others (Google Station)

A collaboration between Google and the Indian state-owned enterprise RailTel brought the first significant free public WiFi initiative to South Asia. The partnership was announced in September 2015 during a visit to the Google headquarters in California by India's prime minister, with an initial target of establishing service in 400 railway stations.[138]

First launched in January 2016 at Mumbai's Chhatrapati Shivaji Terminus, the Google Station platform was soon opened up to other providers as Google sought to provide services to cafes, malls, and other public places with free WiFi.[139] In 2017 Google joined a consortium of providers including IBM to work on a smart city project in Pune, bringing its hotspots to outdoor public places for the first time[140]. Google and RailTel reached their target of 400 stations in 2018.[141] In 2019 Google launched a partnership with Cisco for smart cities across India, intending to build 500 WiFi zones in Bengaluru as a pilot project.[142]

After less than five years of operation and having facilitated WiFi access in thousands of locations across India, Google shut the Station programme down in February 2020. Part of the stated rationale for exiting the market was that Indian mobile data prices had reduced by 95% over the span of the project. Other challenges included scaling and sustainability. But while Google bowed out, other ventures continued on - especially those involving railway stations.

Bharti Airtel and others (Facebook Express WiFi)

Facebook's initial foray into connecting the unconnected in India was its FreeBasics mobile app. Via the app, mobile users could access the news, weather, health information, and a limited version of the Facebook app – all without being charged by their carrier for data use.[143] This zero-rated access to information curated by Facebook was seen by civil society and regulators as an egregious violation of the principles of network neutrality, and was soon banned by the country's communication regulator, the Telecom Regulatory Authority of India (TRAI).

138. Hindustan Times. (2016, 22 January). Google, Railtel opens first high-speed WiFi for public at Mumbai's CST. *HT Tech*. https://tech.hindustantimes.com/tech/news/google-railtel-opens-first-high-speed-wifi-for-public-use-at-mumbai-s-cst-story-ArQ6MnVrT0LHytTpjSqfnJ.html
139. Singh, M. (2016, 27 September). Google announces Google Station to offer fast WiFi services everywhere. *Mashable*. https://mashable.com/article/google-station-launch-india
140. Singh, M. (2017, 9 February). Google Station is coming to an Indian city before anywhere else in the world. *Mashable*. https://mashable.com/article/google-station-pune-india
141. Sengupta, C. (2018, 7 June). 400 Wi-Fi enabled train stations in India and counting. *Google*. https://blog.google/technology/next-billion-users/400-train-stations-india/ https://blog.google/technology/next-billion-users/400-train-stations-india/
142. Singh, A. (2019, 29 July). Cisco partners with Google Station to roll out public Wi-Fi in India. *The Week*. https://www.theweek.in/news/biz-tech/2019/07/29/Cisco-partners-with-Google-Station-to-roll-out-public-WiFi-in-India.html.
143. Nothias, T. (2020, 21 April). The Rise and Fall… and Rise Again of Facebook's Free Basics: Civil Society and the Challenge of Resistance to Corporate Connectivity Projects. *Global Media Technologies and Cultures Lab*. http://globalmedia.mit.edu/2020/04/21/the-rise-and-fall-and-rise-again-of-facebooks-free-basics-civil-and-the-challenge-of-resistance-to-corporate-connectivity-projects/

Having lost the ability to provide free limited internet access in early 2016,[144] Facebook re-entered India's emerging connectivity market later in the same year with a paid offering called Express WiFi.[145] Express WiFi was a platform that paired an app, where users purchase data, with a WiFi management platform that ISP partners could attach their WiFi access points to. Carriers could choose to accept cash payments for purchases, or through a "freemium" model could have users to watch an advertisement instead.[146] A trial of the new platform in 2016 saw it rolled out to 125 rural areas with local ISP partners.[147] By the time of its formal market launch in May 2017, there were 700 Express WiFi hotspots across four states in India[148] with ISP partner organisations including AirJaldi, LMES, Tikona, and Shaildhar.[149] The service sought to eclipse Google's 400 WiFi-enabled railway stations with an announcement their plan to launch 20,000 new hotspots to be built by Bharti Airtel.[150]

ISPs D-Vois and Netplus Broadband joined the Express WiFi platform in June 2021 with plans to launch public WiFi hotspots in Bangalore and several cities in Punjab.[151] Bangalore already had a comparatively long history of public WiFi, and D-Vois first launched a free WiFi network there in 2014.[152]

Through a terse update in February 2022, since removed from the Meta website, the company announced the winding down of the Express WiFi project after five years.[153] It's unclear how many of the 20,000 hotspots announced in 2017 were built in that short time.

City of Delhi (Free WiFi)

Politicians in India's capital Delhi began to talk about a city-wide free WiFi network in 2015, and finally gained funding approval in 2019.[154] Once funded, the 11,000 hotspot initiative

144. Vincent, J. (2016, 8 February). Facebook's Free Basics service has been banned in India. *The Verge.* https://www.theverge.com/2016/2/8/10913398/free-basics-india-regulator-ruling
145. Baraniuk, C. (2016, 8 August). Facebook tests Express Wi-fi service in India. *BBC News.* https://www.bbc.com/news/technology-37011806
146. Abecassis, D., Korsukova, E., Kende, M., Morgan, R., & Yee, L. J. (2020). *The Impact of Facebook's Connectivity Initiatives in the ASEAN Region*. Analysys Mason. https://www.analysysmason.com/contentassets/f8a396952f9c4481982c674724d85356/the-impact-of-facebooks-connectivity-initiatives-in-the-asean-region---28-june-2020.pdf
147. Singh, M. (2016, 9 August). Facebook takes another crack at connecting India -- With cheap, not free Wi-Fi. *CNET.* https://www.cnet.com/tech/tech-industry/facebook-having-another-go-at-india-testing-cheap-express-wi-fi-service/
148. Deccan Chronicle. (2017, 4 May). Express Wi-Fi by Facebook launches commercially in India. https://www.deccanchronicle.com/technology/in-other-news/040517/express-wi-fi-by-facebook-launches-commercially-in-india.html
149. Ghoshal, A. (2017, 5 May). Facebook brings Express WiFi to India, partners with Airtel for 700 hotspots. *HT Tech.* https://tech.hindustantimes.com/tech/news/facebook-dials-india-with-700-express-wifi-hotspots-partners-with-airtel-to-bring-20-000-more-story-TFmlJ2UpUqweBDcfoaRY8H.html
150. Agarwal, M. (2017, 5 May). Facebook Rolls Out 'Express WiFi' Project In India; Adds Bharti Airtel As Partner To Launch 20K Hotspots. *Inc42 Media*. https://inc42.com/buzz/facebook-express-wi-fi-project/
151. Tele.net. (2021, 16 June). Facebook amplifies Express Wi-Fi program in India through two new partnerships with D-Vois and Netplus. https://tele.net.in/facebook-amplifies-express-wi-fi-program-in-india-through-two-new-partnerships-with-d-vois-and-netplus/
152. Iyer, R. (2014, 25 January). Bangalore becomes first Indian city to have free wifi hotspots. *NDTV*. https://www.ndtv.com/bangalore-news/bangalore-becomes-first-indian-city-to-have-free-wifi-hotspots-548791
153. Meta. (2022, 31 January). Update: Express Wi-Fi. https://web.archive.org/web/20220201092230/https://www.facebook.com/connectivity/news/expresswifi-update/
154. Yadav, P. (2019, 5 September). Delhi: Free Wi-Fi at bus stops, markets by December-end. *The Times of India*. https://timesofindia.indiatimes.com/city/delhi/free-wi-fi-at-bus-stops-markets-by-dec-end/articleshow/70984421.cms

was launched within months, albeit with only 100 hotspots, in a press conference meant to fulfil an election promise.[155] Six months after its launch the USD 12 million project, now under the care of the city's Public Works Department (PWD), was still four months from completion.[156] The planned parameters of the network were ambitious: users would be allowed 15 GB of traffic per month at a maximum speed of 200 mbps. The project's hardware was to be owned by private companies but the service was operated by the government. Some crossover was planned between hardware intended for WiFI and hardware installed as part of a massive 2.8 million CCTV camera deployment.[157]

Government documents later claimed that 11,034 free WiFi hotspots were installed, and that the network was used by 660,000 people on a daily basis and two million people in all.[158] Despite this success, three years after the service officially began, it shut down. Some news reports cited the expiry of operational funding, which was the responsibility of the PWD. Other news outlets published statements from government officials saying that the service was not out of funding, but was in fact being re-designed.[159] An unnamed official quoted in the *Times of India* claimed that 30 more constituencies would gain hotspots, an increase of 50% over the initial network of 11,000.[160]

Fourteen months after the shutdown, the service was still offline. Other unnamed sources claim the government was now planning an additional 89,000 hotspots.[161] Given the USD 7.5 million spend on maintaining 11,000 hotspots between 2023 and 2024, the city of Delhi might need to spend 1% of its budget to sustain the network of 100,000 hotspots, if it ever materialises.[162]

Prime Minister's Wi-Fi Access Network Interface (PM-WANI) for local businesses

The departure of Google Station in 2020 left RailTel and other operators with large WiFi deployments but without a major platform to monetise their public networks - save Facebook's Express WiFi. Just months after the closure of Google Station, India's government announced an initiative called PM-WANI that could fill this gap and expand the

155. IANS. (2019, 19 December). Arvind Kejriwal launches free WiFi hotspots while Delhi faces internet shutdown. *Mint.* https://www.livemint.com/news/india/arvind-kejriwal-launches-free-wifi-hotspots-while-delhi-faces-internet-shutdown-11576765074018.html

156. Dey, A. (2020, 12 June). At Delhi's 11,000 Wi-Fi hotspots, free 15GB internet data: Kejriwal. *Hindustan Times*. https://www.hindustantimes.com/india-news/delhi-will-get-free-wifi-in-3-4-months-arvind-kejriwal/story-9qLmk2skhipM0bc9zrZoEM.html

157. Ibid.

158. The Indian Express. (2023, 1 February). Disconnected: Free WiFi in Delhi, AAP govt's ambitious scheme, off since a month. *The Indian Express*. https://indianexpress.com/article/cities/delhi/delhi-aap-govt-free-wifi-contract-expires-8414821/

159. Mishra, S. (2023, 1 October). No funds crunch, govt redesigning scheme to resume free WiFi: Atishi. *The Times of India*. https://timesofindia.indiatimes.com/city/delhi/no-funds-crunch-govt-redesigning-scheme-to-resume-free-wifi-atishi/articleshow/104078806.cms

160. Mathur, A. (2023, 19 February). Delhi government to relaunch "better" free WiFi facility next fiscal. *The Times of India*. https://timesofindia.indiatimes.com/city/delhi/delhi-government-to-relaunch-better-free-wi-fi-facility-next-fiscal/articleshow/98054569.cms

161. Mani, G. (2024, 19 March). Free WiFi service down for over a year in Delhi; govt working on new plan. *The Indian Express*. https://indianexpress.com/article/cities/delhi/at-11000-free-wifi-hotspots-across-delhi-no-network-for-over-a-year-9221646/

162. PRS Legislative Research. (2023). *Delhi Budget Analysis 2023-24.* https://prsindia.org/budgets/states/delhi-budget-analysis-2023-24

market again.[163] Where Google Station and Express WiFi required their hotspot operators to be licensed telecommunications operators or municipalities, PM-WANI did not. It sought to open up the sale of WiFi access to literally anyone capable of operating an access point. All they needed was power and a fixed-line backhaul connection.

Users of the PM-WANI network can buy access to a gigabyte of data, usable over a period of a day, from their local grocery store for as little as INR 6 (around USD 0.08).[164] At the high end, an INR 99 (around USD 1.19) plan offers 100 GB of traffic valid for 30 days. Retail pricing for PM-WANI data is uniform across the country, which can disadvantage rural and remote providers with higher traffic costs should they participate in the scheme.

The scheme's multi-tier architecture established set roles, allocating authentication and accounting to one entity, app provision to another, establishing a central registry to list all hotspots, and finally charging an entity with the key role of operating the hotspots. Hotspot providers do not require a license from the regulator in order to operate[165]

Public data office (PDO)	Any person or company who wants to operate a WiFi hotspot under the PM-WANI scheme. Responsible for arranging access points, power source, and procuring internet bandwidth from ISP/TSP's
Public data office aggregator (PDOA)	A company that provides the user interface that allows end users to purchase data.
App provider	A company that develops an app allowing end users to register for PM-WANI and to discover hotspots they can use for internet access.
Central registry	Certifies PDOA and app provider software. Maintains a list of all app providers, PDOs, and PDOAs. Currently maintained by the Centre for Development of Telematics (Government of India, entity).

PM-WANI's initial target for PDOs was kirana store operators. India's 13 million kirana stores are neighbourhood shops that handle 90% of the country's food and grocery supplies. In addition to retail, they often provide services like banking, mobile top-ups, and payment collection for utilities.[166]

163. Gill, P. (2020, 10 December). Government's plan for public WiFi lets anyone from the kirana store owner to tea shop stalls sign up to provide the internet. *Business Insider India*. https://www.businessinsider.in/tech/news/what-is-pm-wani-public-wifi-platform-launched-by-union-cabinet/articleshow/79642267.cms

164. https://waniwifi.in/internetplans/Index

165. Garg, R. (2021, 10 February). The PM-WANI Scheme: An Explainer. *Internet Freedom Foundation*. https://internetfreedom.in/pm-wani-explainer/

166. Lodha, Y. (2023, 25 March). Kirana stores: From mom-and-pop shops to multi-utility powerhouses. *The Times of India*. https://timesofindia.indiatimes.com/blogs/voices/kirana-stores-from-mom-and-pop-shops-to-multi-utility-powerhouses/

While operators of the scheme initially targeted shopkeepers, RailTel gave PM-WANI a major boost by converting all 6,102 of its WiFi-enabled railway stations,[167] migrating these 17,000 hotspots to the PM-WANI network between May and June 2022.[168] State-owned telco Bharat Sanchar Nigam Limited (BSNL) joined RailTel in migrating its 30,000 hotspots at the same time.[169] These early migrations formed a strong base for a system that now has more than 199,000 active hotspots, as of June 2024.[170]

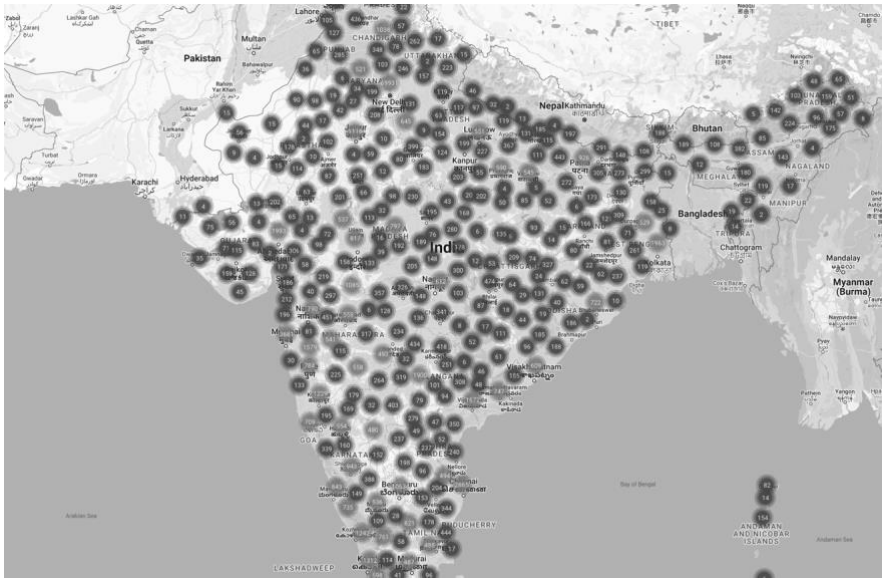

Figure 1: Image: PM-WANI Central Registry

PM-WANI[171] offers consistent data pricing to its users across the country, but the cost of providing backhaul connectivity to hotspot locations can vary by location. Some telcos insist that local businesses pay a commercial use fee for the broadband connections used with PM-WANI.[172] This fee makes it impossible for local businesses to provide WiFi services on a commercial basis.

Indonesia

CBN and FiberStar (Google Station)

Google Station launched in Indonesia in 2017 with partners CBN and FiberStar.[173] Its initial scope was Jakarta, Surabaya, Denpasar, and Bandung. As with its Indian installations, local

167. PTI. (2022, 9 May). RailTel launches PM-WANI scheme-based access of its public WiFi services across 100 stations. *The Times of India*. https://timesofindia.indiatimes.com/railtel-launches-pm-wani-scheme-based-access-of-its-public-wifi-services-across-100-stations/articleshow/91443858.cms
168. Ibid.
169. PTI. (2022, 25 May). Railways and BSNL to migrate their wifi hotspots to PM-WANI framework by June: DoT official. *ET Government*. https://government.economictimes.indiatimes.com/news/technology/railways-and-bsnl-to-migrate-their-wifi-hotspots-to-pm-wani-framework-by-june-dot-official/91777771
170. https://pmwani.gov.in/wani
171. Ibid.
172. Grover, J. (2023, 6 October). DoT, Trai spar over PM Wani programme. *Financial Express*. https://www.financialexpress.com/business/industry-dot-trai-spar-over-pm-wani-programme-3264281/
173. Widiartanto, Y. H. (2017, 24 August). Google Station Bakal Sebar Internet WiFi Gratis di Indonesia. *Kompas*. https://tekno.kompas.com/read/2017/08/24/17531037/google-station-bakal-sebar-internet-wifi-gratis-di-indonesia

partners were to provide and operate the WiFi access points, and Google was to provide a platform that helped operators monetise their infrastructure through advertisements.

Few details were made public about the proliferation and use of Google Station in Indonesia. In 2018, seven locations were installed in Cirebon City,[174] 27 at Jakarta's Bogor Botanical Gardens,[175] and a water park in Palembang was connected.[176] An announcement from FiberStar in December 2018 said they planned to deploy 33 Google Station sites in Bali.[177] And in November 2019, just three months before the shutdown of the platform, Google announced that Telkom Indonesia (Telin) had become its latest deployment partner.[178]

BaliTower and D-Net (Express WiFi)

Facebook's Express WiFi also made an appearance in Indonesia with partners D-Net and BaliTower. A pilot of the service with D-Net was established in 11 areas of Gunung Bromo in 2015.[179] In November 2017 D-Net announced that they would be developing thousands of Express WiFi points in 2018.

BaliTower is an infrastructure provider which owns and manages towers and transmission between them in Jakarta and Bali. In 2020 BaliTower announced it would also be partnering with Facebook to use the Express WiFi platform.[180] Their entry into the platform was via adding an Express WiFi service to existing access points at 100 commercial buildings and 3,000 microcell towers in Bali and the Jakarta metropolitan area.

Government of Bali (Bali Smart Island)

Even with both CBN/FiberStar Google Station and BaliTower Express WiFi active in Bali, the demand for free WiFi in Bali was still unmet. With these commercial ventures targeting high density urban areas to achieve financial sustainability, rural areas were being left behind. In April 2019 the Governor of Bali launched a programme with a different approach. Bali Smart Island's free WiFi provision specifically targeted traditional villages.[181] The project's policy objectives were broad, and covered economic development, education, tourism, health, and strengthening local culture.

174. Komite. (2018, 2 November). FiberStar Gandeng CBN & Google Hadirkan Google Station di Cirebon. https://www.komite.id/2018/11/02/fiberstar-gandeng-cbn-google-hadirkan-google-station-di-cirebon/
175. KumparanTECH. (2018, 19 May). Kebun Raya Bogor Kini Sediakan Wi-Fi Gratis dari Google. https://kumparan.com/kumparantech/kebun-raya-bogor-kini-sediakan-wi-fi-gratis-dari-google
176. Suyudi, T. I. (2018, 11 July). WiFi Publik Google Station dari FiberStar tersedia di Amanzi WaterPark. *It Works*. https://www.itworks.id/13476/wifi-publik-google-station-dari-fiberstar-tersedia-di-amanzi-waterpark.html
177. Akbar, D. (2018, 27 December). FiberStar Perkuat Jaringan Fiber Optik di Kawasan Bali dan Sekitarnya. *Info Komputer*. https://infokomputer.grid.id/read/121276056/fiberstar-perkuat-jaringan-fiber-optik-di-kawasan-bali-dan-sekitarnya
178. Nabila, M. (2019, 20 November). Google Indonesia Umumkan Telkom Sebagai Mitra Terbaru Untuk Google Station. *DailySocial.* https://dailysocial.id/post/google-indonesia-telkom-google-station
179. Adheline, P. (2017, 20 November). D~NET Kembangkan Express WiFi by Facebook di Surabaya. *D-NET*. https://blog.dnetprovider.id/2017/11/20/posts-dnet-kembangkan-express-wifi-by-facebook-di-surabaya/
180. Rahayu, E. M. (2020, 30 January). BaliTower Gandeng Express Wifi dari Facebook. *SWA*. https://swa.co.id/read/245902/balitower-gandeng-express-wi-fi-dari-facebook https://swa.co.id
181. BaliTopNews. (2019, 10 April). Governor Koster Launches Free Wi-Fi. https://www.balitopnews.com/index.php/read/3163/Governor-Koster--Launches-Free-WiFi.html

Bali Smart Island's deployment goals were detailed and specific. The programme sought to install 1,825 access points by the end of 2019, and 4,157 by the end of 2020.[182] It's unclear to what degree these goals were met. A 2022 evaluation of the Bali Smart Island programme in the *Journal of Governance and Public Policy* gave the project high marks for process but did not track actual infrastructure deployments.[183] Later media articles indicate that the rollout may not have kept to schedule, as many villages and schools were still requesting access from the government in late 2020.[184] In 2023 another announcement came from the

Government of Bali saying free WiFi would be installed at 2,307 points across the island.[185] Its goal of a WiFi hub in every village appears very similar to one first communicated in 2019.

Government of Jakarta (JakWifi)

In August 2020, six months after COVID arrived in Indonesia and three months after the government implemented large-scale social restrictions (collectively termed Pembatasan Sosial Berskala Besar), the Governor of Jakarta Province launched the JakWifI programme in August 2020.[186] The programme's aim was to increase the proliferation of free WiFi in densely populated residential areas. Policy goals included improving education, economic development, access to government services, and personal communications. In the face of movement restrictions, low cost communications, especially for students kept home from school, were essential.

At the time of JakWifi's launch, InfoPublik reported that 4,956 access points were available, and that more than 9,000 could be available within the next two months. A news report published the next day by the Jakarta Post conveyed more modest information: the programme aimed to optimise connectivity at 2,619 hotspots, and to provide 1,200 more hotspots in densely populated residential areas of Jakarta.[187]

In early November 2020 *Kumparan* reported that 5,665 access points were now available, breaking down the figure as 1,497 operated by the government, 4,155 operated by BaliTower, and 13 provided by APJATEL.[188] It's likely that the BaliTower contribution was in fact the same set of hotspots added to the Express WiFi platform in January 2020, as mentioned in the section above.

182. Gapura Bali. (2019, 17 April). Getting Smart in Bali. https://www.gapurabali.com/news/2019/04/17/getting-smart-bali/1555461053
183. Sanjaya, I. G. W., & Darma, G. S. (2023). Bali Smart Island: Smart City Implementation in Bali Province. *Journal of Governance and Public Policy*, *10*(2), 203-215. https://doi.org/10.18196/jgpp.v10i2.17325
184. Sun, T. B. (2020, 26 December). Government Provides Free WiFi To 55 Villages In Bali. *The Bali Sun*. https://thebalisun.com/government-provides-free-wifi-to-55-villages-in-bali/
185. The Bali Sun. (2023, 25 September). Bali Rolls Out Free Public WiFi Around The Island. https://thebalisun.com/bali-rolls-out-free-public-wifi-around-the-island/
186. Suranto, G. (2020, 28 August). Pemprov DKI Luncurkan JakWIFI. *InfoPublik*. https://www.infopublik.id/kategori/nasional-sosial-budaya/477390/pemprov-dki-luncurkan-jakwifi
187. Nurbaiti, A. (2020, 29 August). Jakarta launches JakWifi program to provide free internet access. *The Jakarta Post.* https://www.thejakartapost.com/news/2020/08/28/jakarta-launches-jakwifi-program-to-provide-free-internet-access.html
188. kumparanNEWS. (2020, 4 November). JakWIFI, Cara Pintar Mengakses Wifi Publik di Kota Jakarta. https://kumparan.com/kumparannews/jakwifi-cara-pintar-mengakses-wifi-publik-di-kota-jakarta-1uWY6PEmPoZ

In late November 2020, Jakarta's governor Anies Baswedan stated in a webinar that there were, at the time, 9,000 JakWifi access points available for free.[189] Then in June 2021, *Liputan 6* stated that JakWifi had reached 5,000 access points in Jakarta.[190] This report could have been an error, perhaps a hint that earlier figures were overstated, or an indication that some access points that were part of the project had since been withdrawn or gone offline.

At the end of 2022 there were just 3,500 hotspots left in the JakWifi programme, a number reduced to 1,263 on 1 January 2023.[191] The reduction in access points was due to a government cut to the network's operational budget. Government officials justified the budget cut and service reduction by saying that since the end of COVID restrictions, the majority of JakWIfI network use was for entertainment and not its original purpose, remote learning.

Ministry of Communication and Information (BAKTI)

Badan Aksesibilitas Telekomunikasi dan Informatika (BAKTI) is an agency that supports the underdeveloped and frontier regions of Indonesia.[192] It manages the country's universal service obligation (USO) fund, builds remote infrastructure, and funds its ongoing operation. Two of BAKTI's key deliverables over the past decade have been a remote tower and transmission programme and the Palapa Ring set of submarine fibre optic cables.[193]

BAKTI went on to collaborate with the West Jave Provincial Government on a programme to provide access in remote locations called Desa Digital or Digital Village. By 2019 the programme had delivered 155 of a planned 600 points at village halls, offices, schools, and health centres.[194] The project combines digital literacy with volunteer-led training and education.[195]

In July 2022 Singaporean satellite connectivity provider Kacific along with local partners BIGNET and PRIMACOM announced that they had deployed more than 2,500 satellite

189. Rizal, J. G., & Wedhaswary, I. D. (2020, 28 November). Cara Akses JakWifi, Internet Gratis di 9.000 Titik di Jakarta. *Kompas*. *https://www.kompas.com/tren/read/2020/11/28/200200665/cara-akses-jakwifi-internet-gratis-di-9.000-titik-di-jakarta*. https://www.kompas.com/tren/read/2020/11/28/200200665/cara-akses-jakwifi-internet-gratis-di-9.000-titik-di-jakarta

190. Wardani, A. S. (2021, 28 June). Balifiber Perluas Titik Akses Internet Gratis JakWiFi di Jakarta. *Liputan 6*. https://www.liputan6.com/tekno/read/4592711/balifiber-perluas-titik-akses-internet-gratis-jakwifi-di-jakarta

191. Antara. (2023, 13 January). JakWifi and the need for free Internet in Jakarta. https://en.antaranews.com/news/269412/jakwifi-and-the-need-for-free-internet-in-jakarta

192. Muhammad, R., & Matheus Edward, I. Y. (2018). Assessment of IT Governance of Bakti Internet Access Program Based on the COBIT5 Framework: Case Study: Balai Latihan Kerja Kendari. *12th International Conference on Telecommunication Systems, Services, and Applications (TSSA)*, 1-5. https://doi.org/10.1109/TSSA.2018.8708833

193. Kominfo. (2019, 9 April). Program BTS USO Bakti, Internet Gratis Rambah Sekolah di Daerah Pelosok Sultra © Program BTS USO Bakti, Internet Gratis Rambah Sekolah di Daerah Pelosok Sultra. https://m.kominfo.go.id/content/detail/17814/program-bts-uso-bakti-internet-gratis-rambah-sekolah-di-daerah-pelosok-sultra-c-program-bts-uso-bakti-internet-gratis-rambah-sekolah-di-daerah-pelosok-sultra/0/sorotan_media

194. Kominfo. (2019, 14 April). Luncurkan Desa Digital, Menkominfo: Semua harus bisa rasakan Internet! https://www.kominfo.go.id/content/detail/17952/luncurkan-desa-digital-menkominfo-semua-harus-bisa-rasakan-internet/0/berita_satker

195. Umali, T. (2019, 23 April). Indonesia's West Java villages to get free Wi-Fi. *OpenGov Asia*. https://opengovasia.com/2019/04/23/indonesias-west-java-villages-to-get-free-wi-fi/

terminals in remote areas of the country in support of BAKTI's remote internet programme.[196] Terminal locations included schools, vocational training centres, community health centres, tourist locations, village halls and government offices. In the same month, *Antara* News reported that BAKTI had developed a free internet access network in 16,800 locations, with 40 percent of them in the education sector.[197] They also reported a BAKTI target to develop 121,000 free internet access points in remote regions by 2024.

A July 2023 report from *Antara News* quoted a BAKTI official saying that 92,000 schools remained unconnected, a figure used to help justify the development of an Indonesian national satellite project called SATRIA-1.[198] Its satellite launched in late 2023 and was estimated to be ready for operation in early 2024.[199] With its own satellite dedicated to the task of providing free internet in remote locations, we can expect to see reports of many more connections in Indonesia in the future.

Malaysia

City of Penang, REDtone, YTL (Wireless@Penang, Terragraph)

A government approved but private sector funded free WiFi initiative was first announced by officials in Penang in September 2008.[200] Telecommunications operator REDtone and its hotspot partner Hotgate planned a progressive rollout of 750 hotspots across the state in an approximately USD 2 million project. REDtone expected the venture to quickly become self-funded through advertising revenue. The rollout was assisted by a government exemption from normal planning and permitting requirements, as WiFi was an internationally recognised, standards-compliant technology.[201]

The project's second phase launched in 2012 saw the government awarding REDtone – the winning bidder – MYR 8.5 million (around USD 1.8 million) to install an additional 1,550 hotspots throughout the state.[202] While launch publicity didn't discuss ongoing expenses, the government was funding the free WiFi project's operational expenses at a rate of MYR 129,200 (approximately USD 27,400) per month in early 2015, which increased to MYR 154,200 (approximately USD 32,700) per month in March of that year.[203] The 500 percent upgrade in backhaul bandwidth in 2015 was meant to address the daily congestion found on the network between 11 am and 10 pm. Another speed upgrade was applied to 50 hotspots

196. Kacific. (2022, 5 July). Kacific completes milestone deployment of over 2,500 sites in five months for BAKTI government agency in Indonesia. https://kacific.com/blog/news/kacific-completes-milestone-deployment-of-over-2500-sites-in-five-months-for-bakti-government-agency-in-indonesia/
197. Antara. (2022, 21 July). BAKTI prioritizes free internet access in Indonesia's eastern region. https://en.antaranews.com/news/240473/bakti-prioritizes-free-internet-access-in-indonesias-eastern-region
198. Antara. (2023, 31 July). BAKTI to prioritize education sector for satellite internet. https://en.antaranews.com/news/289884/bakti-to-prioritize-education-sector-for-satellite-internet
199. Tanner, J. (2023, 13 December). Indonesia's SATRIA-1 satellite is connected and ready for 2024. *Developing Telecoms*. https://developingtelecoms.com/telecom-technology/satellite-communications-networks/15942-indonesia-s-satria-1-satellite-is-connected-and-ready-for-2024.html
200. Filmer, A. (2008, 19 September). Penang launches statewide free WiFi project. *The Star Online*. https://web.archive.org/web/20080919070229/http://www.thestar.com.my/news/story.asp?file=/2008/9/18/nation/20080918201219&sec=nation
201. Lim Guan Eng. (2009, 22 January). Wireless@Penang is no longer a dream. https://limguaneng.com/index.php/2009/01/21/wirelesspenang-is-no-longer-a-dream/
202. Kameron, D. J. (2012, 16 May). Penang CM launches 'Penang Free WiFi.' *Citizens Journal*. https://cj.my/64556/penang-cm-launches-penang-free-wifi/
203. Malaysian Wireless. (2015, 5 March). Penang Free WiFi service upgraded to 1Mbps speed. https://www.malaysianwireless.com/2015/03/penang-free-wifi-service-1mbps/

in heritage areas of Penang in October of that year at no additional cost to the government.[204]

By 2019 the speeds offered by the 10-year-old network no longer met the expectations of the government, and its services were suspended.[205] By that time the network had around 670,000 logins, at a cost to the city of around $5 per use. In response to the shutdown, two providers quickly made their own free WiFi announcements. Telekom Malaysia announced free WiFi access at local tourist attraction Penang Hill in January,[206] and the ISP YTL announced a collaboration with Facebook on a new WiFi technology called Terragraph in February.[207]

Terragraph is a multi-gigabit wireless access technology that runs in the 60 GHz spectrum, also known as millimetre wave.[208] In the YTL trial, Terragraph was used to create a wireless mesh backhaul operating at gigabits per second, around a thousand times faster than the backhaul provided to the previous Wireless@Penang network. As a mesh wireless technology, it was very fast to deploy. YTL was able to deploy a free public WiFi network on 160 city street lamps in a period of just six weeks.[209] Along with providing backhaul for free WiFi hotspots, YTL was able to use their new network to provide fixed wireless access circuits for 120 local businesses, NGOs, and government offices.[210]

Kota Kinabalu, Kuching, Johor, Selangor (Free WiFi)

With aims to reduce the digital divide, encourage economic development, and boost tourism, a number of local and regional governments throughout Malaysia have launched free WiFi initiatives over the past 10 years.

The state government in Selangor launched a WiFi network spanning 800 locations in 2015, with deployment concentrated around low-income groups, student areas, tourist destinations, and rural areas.[211] A commentator noted that the venture's telephone support line was managed by government-owned Telekom Malaysia.

The state government in Johor also launched a WiFi network in 2015, with initial access points in 135 housing estates.[212] In its first phase, the project had a three-year, MYR 12.477 million (approximately USD 2.6 million) budget.[213] A second phase launched in 2017 aimed

204. Pocket News. (2015, 22 October). Penang State Government Launch Of 50 High Speed Free WiFi Hotspots. https://www.pocketnews.com.my/2015/10/22/penang-state-government-launch-of-50-high-speed-free-wifi-hotspots/
205. Bernama. (2019, 19 January). Penang free WiFi suspended from next month. *Free Malaysia Today*. https://www.freemalaysiatoday.com/category/nation/2019/01/19/penang-free-wifi-suspended-from-next-month/
206. Mok, O. (2019, 28 January). Free Wi-Fi for all at Penang Hill. *Malay Mail*. https://www.malaymail.com/news/malaysia/2019/01/28/free-wi-fi-for-all-at-penang-hill/1717273
207. See, S. S. (2019, 22 April). YTL Terragraph Public WiFi Network In Penang Goes Live! *Tech ARP*. https://www.techarp.com/business/ytl-terragraph-public-wifi-penang/
208. https://terragraph.com/docs/runbook/Overview
209. See, S. S. (2019, 22 April). Op. cit.
210. Wong, A. (2019, 9 July). Penang has the world's largest wireless Terragraph Network with fibre-level performance. *SoyaCincau*. https://soyacincau.com/2019/07/09/terragraph-world-largest-network-penang-malaysia/
211. Farhan. (2015, 23 September). WiFi Selangorku Brings Free WiFi To Selangor Residents. *Lowyat.NET*. https://www.lowyat.net/2015/75612/wifi-selangorku-brings-free-wifi-to-selangor-residents/
212. https://www.facebook.com/officialsultanibrahim/posts/490394111127287/
213. Bernama. (2017, 4 December). Johor caps free WiFi operation hours. *Free Malaysia Today*. https://www.freemalaysiatoday.com/category/nation/2017/12/05/johor-caps-free-wifi-operation-hours/

to add an additional 74 hotspots in urban and rural areas of the state.[214] By October 2017, prepaid premium connectivity was made available using the free public WiFi infrastructure,[215] presumably to help the venture become more financially sustainable.

Kuching City gained a free WiFi network in 2017, in a MYR 10 million (approximately USD 2.1 million) project implemented by PP Telecommunication,[216] a company now known as irix. Kota Kinabalu also introduced free WiFi in 2017 through a PPP between Kota Kinabalu City Hall and Borneo Global Connect Sdn Bhd. The programme's broad aims included attracting foreign investment and making the city pleasant to live in and visit.[217]

Nepal

Nepal Wireless

Mahabir Pun's Nepal Wireless Networking Project was the first significant free public WiFi network in Developing Asia, with its genesis more than 20 years ago.[218] With volunteer labour and donated equipment, a wireless connection was made from the city of Pokhara into the remote mountains of the Kaski and Myagdi districts, eventually connecting a large number of schools and medical clinics. While the venture was groundbreaking in its work to connect remote, unconnected villages, the sustainability of the project has been uncertain.[219] Its reliance on donations and volunteers to provide equipment and support leaves the network and the people it connects in a tenuous situation.

WorldLink (Express WiFi, WiFi Express)

Beginning in April 2018, Nepalese fixed line ISP WorldLink began to offer free public WiFi services at high-profile heritage areas in Kathmandu.[220] In an agreement with the Kathmandu metropolitan authority, a network of six hotspots was funded and built by WorldLink. A similar agreement was entered into with the city of Pokhara for 10 hotspots in September 2018, and the city committed to providing power for WorldLink's infrastructure for three years.[221]

WorldLink's network grew quickly and in 2019 it announced that it would increase its free public WiFi hotspots from 3,000 to 10,000 within a year as part of its corporate social

214. Altai Technologies Ltd. (2017). *Altai Super WiFi Connects Johor of Malaysia.* https://www.altaitechnologies.com/wp-content/uploads/2016/07/170525-Case-Study-Altai-Super-WiFi-Connects-Johor.pdf
215. Chua, J. (2017, 12 October). Hey Johoreans, You're Getting Premium Wi-Fi Service Too. *Rojak Daily*. https://gempak.com/rojakdaily/news/hey-johoreans-youre-getting-premium-wifi-service-too-64584
216. Dason, C. (2017, 2 August). Kuching City gets free WiFi with RA-Fi. *KuchingBorneo*. https://kuchingborneo.info/kuching-city-gets-free-wifi-with-ra-fi/
217. Bernama. (2017, 21 October) *Kota Kinabalu's free WiFi service to spur Sabah's digital economy*. Borneo Post Online. https://www.theborneopost.com/2017/10/21/kota-kinabalus-free-wifi-service-to-spur-sabahs-digital-economy/
218. ABC News. (2003, 26 November). Wireless Networks Open Up Nepal. https://abcnews.go.com/Technology/ZDM/story?id=99622&page=1
219. Adhikari, D. (2013, 9 July). The wireless village. *Himal Southasian*. https://www.himalmag.com/comment/the-wireless-village
220. Online Khabar. (2018, 1 April). Kathmandu city to launch free wifi service at heritage sites. https://english.onlinekhabar.com/kathmandu-city-to-launch-free-wifi-service-at-heritage-sites.html
221. My República. (2018, 5 September). Pokhara to have free Wi-Fi spots at 10 public places. http://myrepublica.nagariknetwork.com/news/49122/

responsibility.[222] Users of the service were able to access the internet for one and a half hours after login.[223]

In 2020, WorldLink entered into a partnership with Facebook, and moved 7,500 of their public WiFi access points across to the Express WiFi platform.[224] With the shutdown of that platform in 2022, the company rebranded its free public WiFi platform "WiFi Express".[225]

Today it has 14,245 public WiFi hotspots throughout the country with more than 17,600 access points deployed. Major commuting route and intersections are a priority, with more than 300 km of roads covered. WorldLink, which has around 175,000 daily users on its WiFi network, plans to grow its hotspot network to 30,000 locations by the end of 2024.[226]

New Zealand

National Library of New Zealand (Aotearoa People's Network Kaharoa)

Coming into operation in 2007, the Aotearoa People's Network Kaharoa (APNK) installs free public WiFi in public libraries around the country in a move to bridge the digital divide.[227] The initiative is led by the National Library of New Zealand and works in partnership with local libraries who choose to participate. Initially funded with USD 4.2 million, it connected 93 libraries in its first year and planned to connect another 40 in its second year. In addition to WiFi it provides internet-connected computer terminals for use by library patrons. Early APNK connections focused on areas poorly served by incumbent operators, and were the first broadband connections available in some remote towns. In 2010 the project won an Australia and New Zealand Best Practice Award,[228] and by 2024 there were 165 libraries participating in the programme.[229]

Kordia (Metro WiFi)

In 2009, the New Zealand government-owned telco Kordia announced a plan to build public Wi-Fi networks in Auckland and Taupō.[230] A representative of the Auckland City Council said the council did not want to own or pay for the WiFi network, but would let Kordia install equipment on the council's buildings and streetlights, and would help promote the network

222. Prasain, K. (2019, 11 March). WorldLink to provide free WiFi hotspots across Nepal. *The Kathmandu Post*. https://kathmandupost.com/money/2019/03/11/worldlink-to-provide-free-wifi-hotspots-across-nepal
223. Setopati. (2019, 11 March). World Link to provide free Wi-Fi to 10,000 places. https://en.setopati.com/market/141673/
224. Collegenp. (2020, 8 October). Facebook Launches Express Wi-Fi Service in Nepal. https://www.collegenp.com/technology/facebook-launches-express-wi-fi-service-in-nepal/
225. Dinesh. (2023, 29 March). WorldLink to Double its WiFi Express Hotspots, and Launch Metro WiFi in Cities. *NepaliTelecom*. https://www.nepalitelecom.com/worldlink-free-wifi-hotspot
226. Jana, S. (2024, March 29). WorldLink Wi-Fi fact check [email].
227. Te Puna Mātauranga o Aotearoa: National Library of New Zealand. (2008). *Briefing for the Minister Responsible for the National Library.* https://www.beehive.govt.nz/sites/default/files/National_Library_BIM_0.pdf
228. National Library Of New Zealand. (2010, 20 October). Aotearoa People's Network Kaharoa wins award. *Scoop News.* https://www.scoop.co.nz/stories/ED1010/S00073/aotearoa-peoples-network-kaharoa-wins-award.htm
229. Meyer, K. (2024, 28 February). REANNZ and the National Library of New Zealand team up to provide eduroam at 165 Aotearoa People's Network Kaharoa (APNK) libraries. *CONNECT Online*. https://connect.geant.org/2024/02/28/reannz-and-the-national-library-of-new-zealand-team-up-to-provide-eduroam-at-165-aotearoa-peoples-network-kaharoa-apnk-libraries
230. The Dominion Post. (2009, 31 January). Kordia to offer state-owned WiFi hotspots. *Stuff*. https://www.stuff.co.nz/technology/34477/Kordia-to-offer-state-owned-WiFi-hotspots

and its use. While the network concentrated on selling access via prepaid plans, it was occasionally offered for free, for a limited time.[231] The network was shut down in December 2014.[232]

The Philippines

Department Of Information And Communications Technology (DICT) (Pipol Konek)

In November 2014 the Senate of the Philippines approved PHP 3 billion (approximately USD 53 million) for a free public WiFi programme to be implemented by the government's Department of Science and Technology.[233] The stated aim of the Pipol Konek: Free Wi-Fi Internet Access in Public Places Project was to assist farmers, students, and the general public in gaining access to communications. 50,872 hotspots were initially planned for schools, libraries, hospitals, transportation hubs, and public spaces in 1,490 towns.[234]

By September 2016, after an additional PHP 1.76 billion (approximately USD 30 million) had been allocated to the project,[235] progress on building WiFi coverage was moving slowly. Central government officials assigned some of the blame for delays to onerous local government permitting processes.[236]

At an event in June 2017, the DICT published specific coverage goals for the project, allowing the public to understand its significance.[237] A report on the *Rappler* website stated that the project was set to provide free WiFi at:

- 4,568 public schools
- 3,173 public parks and plazas
- 2,277 government hospitals and rural health units
- 677 public libraries
- 1,557 national and local government offices
- 682 state universities and colleges
- 90 airports, seaports, and train stations

In August 2017 the Congress of the Philippines passed the Republic Act 10929, the "Free Internet in Public Places Act" which authorised a free public internet access fund (FPIAF) to pay for the ongoing project.[238] This fund was to be sourced from fees levied by the DICT primarily on mobile carriers for the use of cellular spectrum, but also from other sources

231. National Business Review. (2010, 26 October). Kordia offers Aucklanders free wi-fi – at least for 15min. https://www.nbr.co.nz/kordia-offers-aucklanders-free-wi-fi-at-least-for-15min/
232. https://web.archive.org/web/20140214194108/https://www.kordiametrowifi.com/
233. Gubalane, D. (2014, 21 November). Senate Approves ₱3 Billion Budget for Free Public Wi-Fi in the Philippines. *Pinoy Techno Guide*. https://www.pinoytechnoguide.com/2014/11/free-wifi-philippines.html
234. Arsua, K. (2014, 22 November). Free Wi-Fi in the Philippines in 2015? *When In Manila*. https://www.wheninmanila.com/free-wi-fi-in-the-philippines-in-2015/
235. Arceo, A. (2016, 4 September). P1.76B earmarked for free Wi-Fi in proposed 2017 budget. *Rappler*. https://www.rappler.com/business/economy/145175-philippines-free-wifi-public-areas-dict-2017-budget/
236. Gonzales, A. (2016, 8 September). Free Wi-Fi projects slowed down by delayed LGU permits. *Rappler*. https://www.rappler.com/technology/145635-free-wifi-philippines-lgu-permits/
237. Gonzales, A. (2017, 24 June). DICT assures sustained push for 3 big projects at grand event. *Rappler*. https://www.rappler.com/technology/173834-dict-projects-pipol-konek-national-broadband-plan-national-government-portal-launch/
238. Kritz, B. (2021, 13 May). Oddly disconnected. *The Manila Times*. https://www.manilatimes.net/2021/05/13/business/columnists-business/oddly-disconnected/872601

identified by the government's Office of Budget and Management.[239] Key to some difficulties later faced by the project, the fund was allowed to pay for maintenance and other operating expenses, but not to invest in network equipment.[240]

2018 saw the project continue to struggle, and by August 2018 only 1,592 sites were online.[241] In September 2018 it was reported that the project may receive help from the United Nations Development programme (UNDP).[242] A formal partnership between the two agencies was announced in March 2019 to fast-track the rollout of the project.[243]

In October 2019, the DICT announced that they had connected 23 more Pipol Konek sites across 17 regions, for a total of 3,000 sites as of the second of the month.[244] This report was an early indication of issues in reporting on the project's progress towards its goals. The 2018 and 2019 DICT announcements cited above consider each hotspot installed a site, so a single school with six hotspots is counted in their reporting as six sites. Another issue was that the installation of sites was reported, but not whether the sites were connected and online. Many sites (hotspots) were installed in locations without internet connectivity, and so could not be activated and used.

A government Commission on Audit (COA) report on the project later said that by the end of 2019 the project had activated only 3,251 hotspots, meeting only 15% of its targeted number.[245] As many sites had multiple hotspots installed, the number of sites actually implemented was far fewer than the 3,000 announced in October 2019. The COA also reported that USD 120 million dollars had been allocated to the project through 2019, but that most procurement activities run by the programme were not fulfilled by the vendors contracted.

As part of the partnership between DICT and UNDP, the Philippines committed USD 24 million to UNDP in 2018 to fund the installation of 6,000 satellite broadband connections in difficult-to-reach parts of the country.[246] That contract was awarded to the Australian supplier Speedcast, who partnered with local franchise holder Philcomsat (Philippine Communications Satellite Corporation) to carry out installations. Site selection for the project was a joint activity between UNDP and Speedcast. This activity did not go smoothly either. A subsequent COA report found that of the 3,000 locations selected for the first phase of the project, more than half were problematic: "242 sites had 'faulty' or 'incomplete' data preventing proper site surveys; 459 had 'severe geographic or terrain challenges;' 326 had

239. Republic Act 10929. https://www.officialgazette.gov.ph/2017/08/02/republic-act-no-10929/
240. Cordero, T. (2021, 11 June). DICT seeks to use spectrum users fee to fund digital infra programs. *GMA News Online*. https://www.gmanetwork.com/news/scitech/technology/791114/dict-seeks-to-use-spectrum-users-fee-to-fund-digital-infra-programs/story/
241. Aglipay, M. E. (2001). *Committee on Good Government and Public Accountability Report No. 1370*. Republic of the Philippines House of Representatives. https://hrep-website.s3.ap-southeast-1.amazonaws.com/legisdocs/first_18/CR01370.pdf
242. Gamboa, R. (2018, 6 September). Free WiFi Program: It's complicated. *Philstar.* https://www.philstar.com/business/2018/09/06/1848949/free-wifi-program-its-complicated
243. Lizardo, J. (2019, 27 March). DICT will accelerate the free Wi-Fi rollout through UNDP project partnership. *DICT*. https://dict.gov.ph/dict-will-accelerate-the-free-wi-fi-rollout-through-undp-project-partnership/
244. Lizardo, J. (2019, 8 October). DICT holds nationwide simultaneous Free Wi-Fi for All launch. *DICT*. https://dict.gov.ph/dict-holds-nationwide-simultaneous-free-wi-fi-for-all-launch/
245. Rosario, B. (2021, 11 January). Backed by P6.7 B, government's Free Wi-Fi Program failed – COA. *Manila Bulletin*. https://web.archive.org/web/20210111154958/https://mb.com.ph/2021/01/11/backed-by-p6-7-b-governments-free-wi-fi-program-failed-coa/
246. Kritz, B. (2021, 13 May). Op. cit.

'feudal and political issues;' 200 sites (all in Lanao del Sur) were located on private property; and 540 had 'unverified power supply sources."[247]

By the end of 2020, the UNDP satellite project had a completion rate of 15%, and was on track to achieve less than half its goals by the end of the programme in 2022. After a further scandal relating to allegations of falsified customs declarations on imported equipment, the DICT instructed UNDP to terminate its relationship with Speedcast in May 2021,[248] with 927 of the planned 6,000 sites installed. In June 2021 UNDP returned PHP 283.99 million (approximately USD 4.88 million) in unspent funds to the Government of the Philippines.[249]

With the Pipol Konek brand mired in scandal, the DICT re-launched their now six year old free WiFi project as the "DICT's Free Wi-Fi for All Program" by announcing an alternative VSAT provider with higher peak and committed speeds.[250] A press release in July 2021 stated that the Free WiFi for All Program had rolled out 10,311 active sites,[251] which should be interpreted as 10,311 hotspots.

The Free Wi-Fi for All Program has continued to develop since 2021 with the DICT leading once again. By 5 January 2024, they claimed a network of 12,421 active sites (hotspots) in more than 1,100 localities.[252] The project is well short of the 50,872 hotspots initially planned but is growing steadily.

Smart (Google Station)

Smart is the mobile brand of the Philippines Long Distance Telephone Company (PLDT), the country's largest and oldest telco. In February 2019 Smart announced a partnership with Google to launch 50 Google Station sites as part of a pilot project.[253] Among the planned sites were three major airport terminals, rapid transit stations in Metro Manila, bus terminals in Manila, Cebu, and Batangas, a shopping mall in Quezon City, and 10 academic institutions around the country. With a plan to replace Smart's existing free public WiFi offerings, the Google Station product was able to scale quickly. By July 2019 Smart had more than 400 active sites, and claimed to have an average of a million active users per month.[254]

247. Kritz, B. (2021, 16 May). A P1.3-B embarrassment. *The Manila Times*. https://www.pressreader.com/philippines/manila-times/20210516/281801401851252
248. UNDP. (2021, 12 July). [Update] Status of the DICT-UNDP Free Wi-Fi for All Project. https://www.undp.org/philippines/press-releases/update-status-dict-undp-free-wi-fi-all-project
249. Dela Cruz, R. C. (2021, 1 June). UNDP returns P284-M to DICT after dismissing free WIFI contractor. *Philippine News Agency*. https://www.pna.gov.ph/articles/1142245
250. Lizardo, J. (2021, 1 June). DICT VSAT: 20 times faster; 5 times cheaper than previous foreign contractors. *DICT*. https://dict.gov.ph/dict-vsat-20-times-faster-5-times-cheaper-than-previous-foreign-contractors/
251. Dela Cruz, R. C. (2021, 23 July). Improved connectivity, free internet under Duterte admin. *Philippine News Agency*. https://www.pna.gov.ph/articles/1148087
252. https://freepublicwifi.gov.ph/livehotspots/
253. Mateo, J. (2019, 15 February). *Google, Smart establish free WiFi stations*. *Philstar*. https://www.philstar.com/headlines/2019/02/15/1893840/google-smart-establish-free-wifi-stations
254. 2nd Opinion. (2019, 25 July). Over 400 sites in the Philippines now powered with Google Wifi. https://2ndopinion.ph/over-400-sites-in-the-philippines-now-powered-with-google-wifi/

A steady stream of additions in cities including Binalonan and Iloilo City saw Smart installing more than 600 Google Station locations in 2019.[255] Less than a year after entering the Philippine market, Google shut down its Station free WiFi programme.[256]

Samoa

Netvo Samoa (Free WiFi)

Free WiFi is generally met with open arms throughout Asia and the Pacific, but we can find an exception in Samoa. In September 2020 an NGO called the E3 Samoa Trust – associated with Fa'atuatua i le Atua Samoa ua Tasi (FAST) party politician Togisala Tony Leota – announced a plan to bring free WiFi to more than 50 schools in Savaii.[257] The announcement was made from the FAST party headquarters, and came with the news that 10 schools had already been connected. Togisala was also CEO of Netvo Samoa, the local ISP providing this internet service in partnership with satellite broadband provider Kacific.

Government reactions to the initiative were quick and negative. The prime minister of Samoa declared the project was implemented illegally and without proper process. These comments supported by the minister of telecommunications.[258] Some of the government's concerns were around the safety of children using the service, and their potential exposure to indecent materials. That the FAST Party was chaired by a former cabinet minister who was not aligned with the government at the time was not mentioned in complaints.

By 29 September 2020, the Office of the Regulator of Samoa issued order 2020/T04, requiring the company to cease and desist the roll-out and continuation of the Project until regulatory approval was granted.[259]

The following year, Netvo relocated the satellite dishes from the public schools where they had been installed to a multi-denominational set of church-operated schools.[260] It was not made clear how the new initiative would meet the requirements of the regulator, but no further reports have been published citing government interference.

South Korea

City of Seoul (Smart Seoul Network)

Smart Seoul 2015 was the fourth phase of the city's 1999 strategic ICT plan.[261] It kicked off in 2010 with a five year plan to enable e-government and encourage active civic

255. MyCebu. (2019, 30 October). Smart to roll out Google Station free WiFi in Iloilo City. https://www.mycebu.ph/article/smart-google-station-iloilo/
256. Gonzales, A. (2020, 17 February). Google to shut down free WiFi program. *Rappler*. https://www.rappler.com/technology/252063-google-station-wifi-program-shutting-down/
257. Vai, M. (2020, 21 September). Community Project Provides Free Wifi to Schools in Savaii. *Samoa Global News*. https://samoaglobalnews.com/community-project-provides-free-wifi-to-schools-in-savaii/
258. Radio New Zealand. (2020, 22 September). Political row erupts over Samoan school WIFI project. https://www.rnz.co.nz/international/pacific-news/426639/political-row-erupts-over-samoan-school-wifi-project
259. https://www.regulator.gov.ws/images/ORDERS/Telecom/2020/Order-OOTR-2020-T04.pdf
260. Sanerivi, S. S. (2021, 10 February) Free WiFi project launches in Savai'i. *Samoa Observer*. https://www.samoaobserver.ws/category/samoa/78890
261. Seoul Metropolitan Government. (2019, 17 September). Process and Achievements: Seoul's e-Government. *Urban SDG Knowledge Platform*. http://www.urbansdgplatform.org/profile/profile_caseView_detail.msc?no_case=142

participation. The plan recognised that the advent of smartphones in 2007 had huge potential for urban development, and that they could transform public spaces so that they better served the needs of the people.[262] The plan predicted that by 2015, more than 80% of the population would be using the internet on wireless devices. It posited that free WiFi was essential to ensuring citizens could use their devices at any time and in any public place, including parks, libraries, streets, welfare and public facilities.

After signing a joint MoU with three wireless service providers to install public WiFi in 10,000 locations, coverage grew from around 5 km² to nearly 82 km² between 2011 and 2015. This MoU saw the city leasing spare capacity from its own CCTV and traffic signalling networks to the carriers to use for the deployment of WiFi. It also saw the private carriers committing USD 44 million of their own cash to the project.[263]

Subsequent phases of Seoul's ICT plan continued to address the availability of free WiFi. In 2016 the metropolitan government announced a five-year, USD 374 million investment that would cover all public places, including moving subways and buses.[264] A 2019 announcement committed an additional USD 86 million to setting up wireless internet,[265] and a 2023 report from the city government said that over 7,500 new hotspots were installed in 2022.[266]

Government of South Korea (Public WiFi)

In addition to regional initiatives in Seoul, Jeju Island,[267] and Ulsan[268], the government of South Korea, via its Ministry of Science and ICT, has also encouraged and sponsored the rollout of free public WiFi across the country and on public transportation.

Through a collaboration between the aforementioned Ministry and 16 local governments that began in 2018, WiFi access points were installed in around 35,600 buses nationally by 2020.[269] In 2023 a programme was announced to upgrade 29,100 of these buses, which had been using 4G for backhaul to 5G backhaul, enabling on-bus speeds of up to 400 Mbps.[270]

Further support from the central government has come in the form of free WiFi access points in public areas like transportation stations and community centres around the country.[271] In 2020, state-owned operator Korea Telecom planned to install an additional 10,000 public

262. http://english.seoul.go.kr/wp-content/uploads/2014/02/SMART_SEOUL_2015_41.pdf
263. Phys.org. (2011, 15 June). Seoul to offer free wifi in public areas. https://phys.org/news/2011-06-seoul-free-wifi-areas.html https://phys.org/news/2011-06-seoul-free-wifi-areas.html
264. Smith, D. (2016, 24 February). Every public place in Seoul will have free WiFi by 2017. *Business Insider*. https://www.businessinsider.com/seoul-will-have-free-public-wifi-by-2017-2016-2
265. Kang, S. (2019, 7 October). Seoul to become free WiFi city. *Korea Times*. https://www.koreatimes.co.kr/www/nation/2024/03/281_276745.html
266. Seoul Metropolitan Government. (2023, 8 June). Citywide installation of 3,000+ high-speed free WiFi hotspots. https://english.seoul.go.kr/citywide-installation-of-3000-high-speed-free-wifi-hotspots/
267. Newsis. (2019, 4 January). Jeju to install more public Wi-Fi in 800 places. *Invest KOREA*. https://www.investkorea.org/jj-en/bbs/i-1497/detail.do?ntt_sn=479567
268. https://www.yna.co.kr/view/AKR20181221020700057
269. Park, S. (2020, 14 December). S. Korea establishes free nationwide WiFi network on public buses for first time. *Aju Press*. https://www.ajudaily.com/view/20201214144523898
270. Park, S. (2023, 5 December). S. Korean public buses to provide faster 5G-based free Wi-Fi service. *Aju Press*. https://www.ajudaily.com/view/20231205161517529
271. Cho, M. (2020, 20 August). *KT to expand South Korea's free public Wi-Fi availability*. ZDNET. https://www.zdnet.com/home-and-office/networking/kt-to-expand-south-koreas-free-public-wi-fi-availability/

access points that offered free service. They also planned to upgrade 18,000 older points - installed before 2014 - to newer models through a USD 15 million upgrade programme.

Sri Lanka

Government of Sri Lanka (Public WiFi project)

Free WiFi zones in all towns was written into President Maithripala Sirisena's 2014 election manifesto.[272] After his election in 2015, it took just four months for his government to launch the "Free Wi-Fi for Regional Towns" programme with zones in 100 towns around the country.[273] Users of the service, once registered with a phone number and their national identity card number, could access up to 100 MB of internet service per month at the hotspots.

When promoting the programme the following year, Sri Lanka's Information Communication Technology Agency (ICTA) stated that it was implemented not just because of an election pledge, but because the government understands that "free and unrestricted internet access is [...] a fundamental right".[274] The ICTA was clear in communicating that Sri Lanka's free WiFi service was being installed and operated at no cost to the government, and that carriers were expected to recoup their costs through commercial offerings.

National telecommunications carrier Sri Lanka Telecom (SLT), trading as SLTMobitel, were offering their fixed line customers access to their network of public WiFi hotspots as early as May 2014.[275] Customers were able to use their fixed-line internet (ADSL) credentials to access any of SLT's public WiFi hotspots around the country. News articles in 2017 indicate that Sri Lanka Telecom was also offering both pre and postpaid data services via their public WiFi hotspots.[276]

Thailand

National Telecom (Google Station, Buzz Privilege)

In July 2018 National Telecom (NT), then known as CAT Telecom, partnered with Google to roll out Google Station via CAT's existing public WiFi hotspots.[277] In an initial three-year MoU, CAT agreed to migrate its Bangkok access points into the Google Station system. Google and CAT expected to share in the revenue earned from Google Station's advertising platform. While it's unclear exactly how many locations or access points were part of the

272. Sirisena, M. (2014). *A Compassionate Maithri Governance, A Stable Country*. New Democratic Front. http://www.srilankaguardian.org/2014/12/maithri-full-text-of-manifesto.html
273. The Sunday Times. (2015, 19 April). President honours pledge with launch of 'Free Wi-Fi for All'. http://www.sundaytimes.lk/150419/news/president-honours-pledge-with-launch-of-free-wi-fi-for-all-145211.html
274. Information and Communication Technology Agency of Sri Lanka. (2016, 4 October). ICTA to over-deliver President's pledge of free Wi-Fi. https://www.icta.lk/media/news/icta-to-over-deliver-presidents-pledge-of-free-wi-fi
275. Sri Lanka Telecom. (2014, 21 May). SLT launched world class "Carrier-grade" public Wi-Fi "hotspots" for the First Time in Sri Lanka. https://www.ft.lk/business/slt-launches-world-class-carrier-grade-public-wi-fi-hotspots-in-sri-lanka/34-296928
276. Daily FT. (2017, 21 June). SLT launches islandwide free 'pre-paid' public Wi-Fi promotion. https://www.ft.lk/it-telecom-tech/slt-launches-islandwide-free-pre-paid-public-wi-fi-promotion/50-623459
277. Tortermvasana, K. (2018, 17 July). CAT unites for Google Station. *Bangkok Post*. https://www.bangkokpost.com/business/general/1504770/cat-unites-for-google-station

Google Station deal, CAT was known to have thousands of public WiFi points in service around the country prior to the partnership.

After the withdrawal of the Google Station platform in 2020, free public WiFi remained a priority for NT. In 2021 it established a new subsidiary called NT iBuzz with the aim of providing 100,000 free public WiFi hotspots across the country in its first year of operation, and up to 300,000 hotspots by 2023.[278]

Government of Thailand (Net Pracharat)

Thailand's Village Broadband Internet Project, Net Pracharat, was an effort to connect all of the country's villages to fibre optic internet. Its policy goal was building a digital infrastructure that enabled all Thais to access broadband internet to enable economic prosperity and social well-being, raise human values, and encourage environmental protection.[279] The initiative started in 2017, and had connected 3,000 communities by May of that year.[280]

By December 2017, the Telephone Organisation of Thailand (TOT), responsible for the implementation of Net Pracharat, had completed installation in 24,700 villages. With each fibre connection they installed, they also put up a free public WiFi hotspot.[281] Less than a year later there were 4.5 million users registered with Net Pracharat's WiFi, and by July 2019 there were 6.6 million users registered.[282]

The Thai government continued the popular and successful Net Pracharat project after 2017 at a slightly lower velocity but had still connected 74,987 villages by late 2022.[283] At the same time, recognising that affordability is a key issue for rural people, they sought to reduce the fees on fibre subscriptions to a rate of 2% of gross national income per capita.

The third phase of the Net Pracharat project aims to transform internet use into economic activity to increase the contribution of digital revenue to the country's GDP.

Uzbekistan

Asia Wireless Group (SOLA)

Uzbekistan's first WiFi network launched in Tashkent in 2018, built by the Asia Wireless Group and operated under their SOLA brand. 1,200 access points were installed for the launch, and the company planned to increase the network to 5,000 hotspots within the

278. Tortermvasana, K. (2021, 16 November). NT targets 100,000 free WiFi hotspots by end of next year. *Bangkok Post*. https://www.bangkokpost.com/business/general/2216023/nt-targets-100-000-free-wifi-hotspots-by-end-of-next-year
279. Adipat, B., Phongwitthayanukit, N., Siributr, B., Phetnil, W., & Sudkangwan, P. (2019). *APT Report on Best Practice of Connectivity: Village Broadband Internet Project (Net Pracharat) of Thailand*. Asia-Pacific Telecommunity. https://www.apt.int/sites/default/files/Upload-files/PRF/APT_Report_on_the_Best_Practice_ot_Connectivity_Netpracharat.pdf
280. https://www.ojsat.or.th/main/the-association-for-overseas-technical-scholarship-aot/
281. https://npcr.netpracharat.com/Netpracharat_EN/one-page/
282. Yoon, Y. (2022). *Socio-Economic Impact Assessment & Framework: Net Pracharat*. ITU. https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2023/RDF-2023/Presentations%20and%20Relevant%20Reports/Session%209/Net%20Pracharat%20Socio-Economic%20Impact%20Assessment%20and%20Framework_July2023.pdf
283. The Nation. (2022, 28 November). Thailand extends free broadband to 75,000 villages, aiming for 30% digital economy. *Asia News Network*. https://asianews.network/thailand-extends-free-broadband-to-75000-villages-aiming-for-30-digital-economy/

year.[284] The network was designed as a commercial operation with limited free access available after watching a commercial, and unrestricted paid access provided on time-bound plans.

By presidential decree, use of the public WiFi network was restricted to identified users, with login via an SMS-issued password.[285] To cater to users of the country's railway system, special travel vouchers for WiFi use were issued to foreigners who purchased train tickets.

During early phases of the network's construction, Asia Wireless Group attracted more than USD 12 million in foreign investment. As part of a further phase to install up to 45,000 hotspots, the company hoped to attract an additional USD 110 million in funding.[286]

Vietnam

Da Nang, Hanoi, Ho Chi Minh City, Hoi An, Mong Cai, Tam Dao (Free WiFi)

Vietnamese cities catering to the tourist market have been providing free WiFi for more than 10 years.[287] In January 2014, Tam Dao became the fifth tourist city to provide free WiFi, following Da Nang, Hoi An, Hue, and Ha Long.

Da Nang's system operated as a trial for its first year, and officially launched in August 2014 with 330 access points mounted on lightning poles and public buildings.[288] Access to local government and tourist portals on the Da Nang website was unrestricted, and the network was also used by the city for a number of smart city applications.

Hanoi first installed a free WiFi system around popular tourist destinations in 2017.[289] In 2020 the local government asked Vietnam Posts and Telecommunication (VNPT) to expand the system, installing public WiFi systems in five more districts.

Mong Cai, a city in the north of Vietnam, launched a tourism-focussed WiFi system at the beginning of 2023.[290] Along with hotspots, the city installed QR scanning points enabling easier access to tourist information. Mong Cai's goal is to become "a smart tourist city".

284. Daily Sabah. (2018, 19 December). Central Asia's first citywide Wi-Fi network launched in Uzbekistan's Tashkent. https://www.dailysabah.com/technology/2018/12/19/central-asias-first-citywide-wi-fi-network-launched-in-uzbekistans-tashkent
285. O'zbekiston Temir Yo'llari. (2023, 16 February). At the moment, free Wi-Fi is widely available at train stations. https://www.railway.uz/en/informatsionnaya_sluzhba/novosti/13746/
286. Kun.uz. (2019, 10 September). Wi-Fi operator Sola plans to create over 45,000 access points in Uzbekistan. https://kun.uz/en/news/2019/09/10/wi-fi-operator-sola-plans-to-create-over-45000-access-points-in-uzbekistan
287. Vietnam Tourism.(2014, 16 January). Tam Dao tourism area officially launches free wifi service. https://vietnamtourism.gov.vn/en/post/6873
288. Hanoi Times. (2014, 4 August). Free wifi oficially launched in Da Nang. https://hanoitimes.vn/free-wifi-oficially-launched-in-da-nang-43788.html
289. Ministry of Information and Communications. (2020, 25 August). Hanoi to provide free Wi-Fi at tourist sites. https://english.mic.gov.vn/hanoi-to-provide-free-wi-fi-at-tourist-sites-197144176.htm
290. VNA. (2023, 9 January). Mong Cai launches free Wi-Fi services for visitors. *VietnamPlus*. https://en.vietnamplus.vn/mong-cai-launches-free-wifi-services-for-visitors/246741.vnp

In Ho Chi Minh City local authorities installed around 1,000 WiFi access points to meet the needs of around 10,000 workers living in dormitories across the city. The programme, executed by Vinatech JSC, was expected to scale up to eventually providing services for 100,000 workers by 2019. While one worker interviewed was happy to be saving on monthly internet fees, another was disappointed by the peak hour congestion of the service.[291]

291. Tuoi Tre News. (2017, 8 August). Ho Chi Minh City provides free Wi-Fi for workers. https://tuoitrenews.vn/news/society/20170808/ho-chi-minh-city-provides-free-wifi-for-workers/40918.html

Discussion

Free public-access WiFi initiatives have seen significant momentum across the globe, particularly from around 2013, with both developing and developed countries launching various projects. These initiatives have had a wide range of motivations, operational models, and ownership models.

Context

Increasing demand for access to digital services and platforms has put pressure on telecommunications companies and governments alike to deliver more ubiquitous and affordable access. But what is behind the many deployments of public WiFi infrastructure?

Why WiFi?

Part of the answer lies in the technology itself. WiFi has some key characteristics that make it particularly amenable to the kinds of deployments that we've seen in this report. Thanks to a combination of license-exempt spectrum, mass manufacturing and open standards, WiFi chipsets have become extremely affordable and ubiquitous. We find WiFi embedded in all modern phones and laptops, and many other devices besides. WiFi chips themselves can cost less than USD 1, and a modern WiFi hotspot can cost as little as USD 50. This can make the prospect of building public WiFi infrastructure quite appealing from a financial point of view.

However, the cost of public WiFi infrastructure goes far beyond the cost of the access point. Other core costs include the cost of the internet backbone connecting the hotspots, both the physical backbone as well as the data charges, the management software platform, and the maintenance and service required to ensure ongoing hotspot operation.

This brings us to the second significant motivation for WiFi infrastructure. Institutions may already own key aspects of the infrastructure needed. Governments or private operators may already own their own fibre optic backbone infrastructure, making the marginal cost of installing and operating WiFi access points quite low. Governments already own real estate, including local prefectures, hospitals, police stations, schools, etc., to which they may already have committed the provision of internet to enable government services. In these situations, the case for installing public access WiFi is clear.

While public service is a strong motivator for the deployment of free WiFi networks, politics can also be a significant factor. In some contexts, election promises have played a significant role in the genesis of many projects. Free public WiFi announcements often seem to coincide with election cycles, as a visible and popular government deliverable.

In other cases, the desire to promote tourism, economic development or support education has been more prominent. We can see this in efforts to bring free WiFi to destinations like Mount Everest[292] and Mount Kilimanjaro.[293] The idea of providing public WiFi as a means of universal access was mentioned far less frequently as a motivator than improving conditions

292. Carey, M. (2017, 10 February). Mount Everest Base Camp is getting free Wi-Fi. *Condé Nast Traveler*. https://www.cntraveler.com/story/mount-everest-base-camp-is-getting-free-wi-fi

293. Kuta, S. (2022, 23 August). Wi-Fi comes to Mount Kilimanjaro. *Smithsonian Magazine*. https://www.smithsonianmag.com/smart-news/mount-kilimanjaro-gets-high-speed-wi-fi-180980619/

for tourists was. This diversity in motivations suggests that, while the goal of expanding internet access is universal, the paths to achieving it can be influenced by local priorities.

Operational models

In addition to free access, common themes in support of free public WiFi have included supporting tourism, fulfilling election promises, promoting economic development, smart cities, promoting access to education and government services, and revenue generation through advertising or the sale of connectivity products.

Funding models and deployment costs have varied, with one-off government contributions being common and the projects in question ranging in size from thousands to millions of US dollars.

This study examined over 100 initiatives from across Africa, Asia and the Pacific, and reviewed some of the larger projects from 25 countries. Nearly all of the significant WiFi initiatives covered were built within the past 10 years.

Type	Description	Examples
Advertising - driven networks	Digital platform companies' revenues derive in large part from advertising services. It is therefore not surprising to find public access models that exchange internet access for targeted advertising. Like other forms of digital advertising, these services also collect demographic data about consumer interests. Users of these platforms may have to watch an advert, or periodic adverts, to connect to the internet.	Google Station is probably the most well-known example of an ad-supported WiFi network. That model now continues with Think WiFi in South Africa and Kenya. The now-defunct BRCK in Kenya is another example.
Corporate brand promotion	Free WiFi is used for brand promotion by many corporations, ranging from petrol stations, to cafes, to global digital platforms.	TikTok's WiFi hotspot initiative in South Africa, Coca-Cola's Coke Studio Campaign in Kenya, as well as the many free WiFi hotspots set up by local businesses to offer value added service to their customers are examples of this.
Freemium WISP businesses	Recognising that many potential customers lack an awareness of the value of online services and resources, some wireless ISPs (WISPs) provide limited free access to the internet at wireless hotspots as a means of attracting and onboarding new customers.	The Kenyan WISP poa! offers 100MB free data per customer every day at all of their hotspots. The non-profit Hello World partners with local ISPs to obtain free backhaul for their free WiFi hotspots. ISPs offer this in expectation that this will encourage users to purchase their commercial services.
Municipal support networks	Many public WiFi initiatives have been combined with smart city and CCTV / public security functions to make a better business case for free public access provision.	The City of Cape Town in South Africa chose to add public WiFi services on the back of their Open Access municipal fibre network. A key feature of Bangladesh's Digital Sylhet City project was its CCTV and facial recognition capabilities, which the cities involved hoped would help fight crime.
Network extension ventures	Operators around the world have taken advantage of the infrastructure placement rights tied to public WiFi provision to run cables and build fixed wireless access networks to service their subscribers. Others have extended network access over their public WiFi networks to their existing fixed line or mobile customers.	Nepal's WorldLink and Penang's YTL have both leveraged the infrastructure placement rights tied to free WiFi provision to grow their networks. Sri Lanka's SLT allows its fixed line customers special access to its public WiFi infrastructure.

Very often free public WiFi initiatives represent some combination of the operation models above. Wireless ISPs may benefit from government funding to set up free WiFi hotspots which enables them to also offer paid internet services with more data and/or higher speeds.

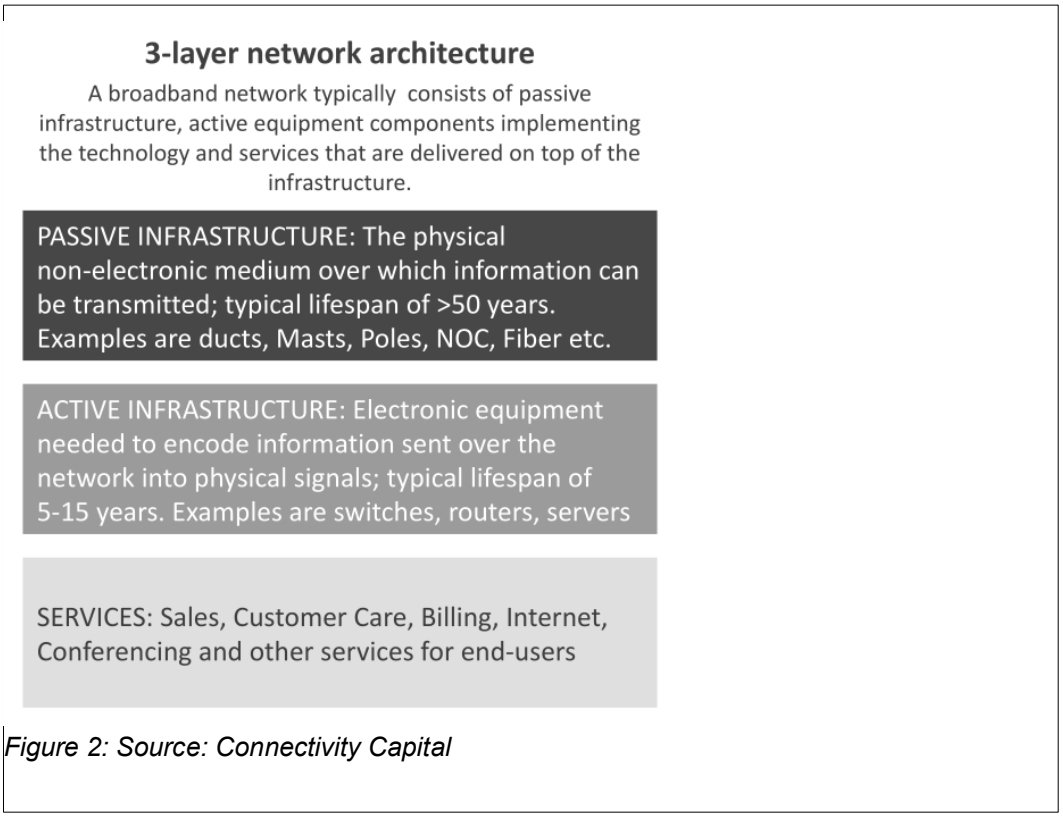

Figure 2: Source: Connectivity Capital

Google Station combined an ad-driven model with brand promotion. Facebook's Express WiFi initiative was a combination of freemium, ad-driven, and corporate brand promotion. A combination of business models may contribute to the sustainability of free public WiFi services. The shutting down of Google Station and Express WiFi may suggest that advertising-driven public WiFi initiatives are not sustainable, however, many of the multi-use networks they partnered with continued on without them. Notably, Think WiFi continues to operate an advertising-driven public WiFi network in South Africa even after Google Station's departure, and has now expanded into Kenya.

Public WiFi often means public spaces, infrastructure, and buildings. When public WiFi has its genesis in election promises or policy goals, it can mean public money. The use of public funding and public real estate gives governments leverage when negotiating both their goals with carriers and the ownership models of public networks. While a few initiatives have been purely private sector ones, many have been some form of public-private partnership.

Ownership models

Another way of making sense of free public WiFi initiatives is to look at the ownership structure of various aspects of the network. Here we can broadly break network ownership down into three categories: passive infrastructure, active infrastructure and services.

In a recent APC-funded report titled *Financing Mechanisms for Locally Owned Internet Infrastructure,*[294] the authors used a three-tier network architecture to break down the kinds of community connectivity providers operating around the world – see the image to the right. We take that model slightly further here, and break down the various subcategories of network architecture to examine different breakdowns of network infrastructure ownership in free public WiFi initiatives.

In the table below it can be seen how four different public WiFi initiatives, referenced in this report, break down according to different levels and aspects of network ownership and management. Unpacking network ownership in this fashion may assist in better understanding sustainability, responsibility, and incentives for network management and growth.

294.[294] Forster, J., Matranga, B., & Nagendra, A. (2022). *Financing mechanisms for locally owned internet infrastructure*. Association for Progressive Communications, Connect Humanity, Connectivity Capital and the Internet Society. https://www.apc.org/en/pubs/financing-mechanisms-locally-owned-internet-infrastructure

	Infrastructure Type		Initiative			
			PM-WANI India	Cape Town Open Network South Africa	Google Station Philippines	WorldLink Express WiFi Nepal
Ownership	Passive infrastructure	Rights of way	N/A	City of Cape Town	RailTel	Local municipalities
		Ducts	N/A	City of Cape Town	N/A	N/A
		Dark fibre	N/A	City of Cape Town		WorldLink
		Towers / buildings	Public Data Office	Third party		N/A
		Poles	N/A	N/A	RailTel	Local municipalities
		Power	Public Data Office	City of Cape Town	RailTel	Local municipalities
	Active infrastructure	Wireless radios	Public Data Office	City of Cape Town		WorldLink
		Terminals, routers, etc	Public Data Office			WorldLink
	Services	Network management	Public Data Office	City of Cape Town	Google	WorldLink
		Network access	Public Data Office Aggregator, App Provider	Multiple ISPs		
		Billing management	Public Data Office Aggregator	Multiple ISPs		Facebook
		Sales and advertising	All actors	All actors	RailTel / Google	WorldLink

Where public infrastructure and/or funding is employed in providing public WiFi, initiatives are frequently designed as PPPs. Lightweight agreements like those between Nepal's WorldLink and various municipalities are essentially operation licences. In the Philippines, funding restrictions placed on the implementing agency resulted in a Design Build Finance Operate model, where private operators took on all functions except site acquisition. Pipol Konek implementers were required to finance their installations, receiving only service fees from the Philippines government.

Google and Facebook

Both Google Station and Facebook's Express WiFi are referenced in many of the country profiles above and, as such, merit some broader discussion.

Google Station

In late 2015, Google announced that it would be rolling out free WiFi access in railway stations across India in partnership with RailTel, a state-owned Indian railway operator. In this partnership, Google provided software to provision, manage, and monitor the WiFi access platform as well as networking expertise and training. Google Station's business model was based on advertising, requiring users to watch a predetermined amount of content prior to accessing the internet. This model works best in high footfall areas with significant transient populations. In this context, railway stations were ideal. RailTel also generated revenue directly as they charged a basic access fee to access the railway station platform.

Google Station was subsequently rolled out in other countries, including Indonesia, Brazil, Thailand, Vietnam and Mexico. In Africa, Google Station was launched in Nigeria in 2018, in partnership with the fibre network provider 21st Century. They announced plans for 200 different locations across five cities in Nigeria.[295] Google followed this with a 2019 launch in South Africa, in partnership with Think WiFi. They announced plans for 125 WiFi hotspots across Cape Town.[296]

In February 2020, less than a year after their launch in South Africa, Google announced that it was shutting Google Station down globally, claiming variously that they were no longer needed or that they couldn't find a sustainable business model. In India, RailTel took over Google Station and continues to offer free WiFi.[297] In South Africa, Google Station was taken over by Think WiFi, which continues to offer an ad-driven free WiFi service. In 2023, Think WiFi expanded its service to Kenya.[298]

295. Vanian, J. (2018, 27 July). Google Is Adding Free Wi-Fi Hotspots in Nigeria as Part of Push in Africa. *Fortune*. https://fortune.com/2018/07/27/google-nigeria-africa-WiFi-hotspots/; for more on 21st Century Technologies, see: https://www.21ctl.com/
296. McLeod, D. (2019, 7 November). Google Launches Free Public Wi-Fi Initiative in South Africa. *TechCentral*. https://techcentral.co.za/google-launches-free-public-wi-fi-initiative-in-south-africa/180503/; for more on Think WiFi, see: https://www.thinkWiFi.online/
297. Singh, M. (2020, 17 February). Google ends its free Wi-Fi program Station. *TechCrunch*. https://techcrunch.com/2020/02/17/google-ends-its-free-wi-fi-program-station/
298. O'Grady, V. (2023, 11 May). Ad-funded Wi-Fi Launches in Kenya – With Help From TIP. *Developing Telecoms*. https://developingtelecoms.com/telecom-technology/wireless-networks/14965-ad-funded-wi-fi-launches-in-kenya-with-help-from-tip.html

Express WiFi

Express WiFi was an initiative of Facebook Connectivity. The goal of Express WiFi was to make the internet, and Facebook in particular, more accessible through the deployment of WiFi hotspot infrastructure. Facebook partnered with ISPs in emerging markets to deploy WiFi hotspots that were managed by Facebook's captive portal software. Users could gain access to Facebook and other limited internet resources for free. Full access to the internet could be had through the purchase of vouchers available through Facebook's partner ISP. As with Google Station, Express WiFi provided a software as a service (SaaS) WiFi access platform and management.[299]

Express WiFi also provided capital to some ISPs to assist in the roll-out of WiFi infrastructure, and partnered with hardware vendors to make hardware compatible with Express WiFi available to its ISP partners.

The first Express WiFi deployment was in India in 2016,[300] in partnership with five Indian ISPs. In Africa, Express WiFi launched in Nigeria and Kenya in 2017,[301] in South Africa in 2019,[302] and in Uganda in 2020.[303] A full list of Express WiFi partner countries is as follows:

Africa	Burkina Faso, Ghana, Kenya, Malawi, Nigeria, Senegal, South Africa, Tanzania and Uganda
Americas	Argentina, Brazil, Chile, Ecuador and Peru
Asia	India, Nepal, Thailand, Indonesia and Philippines

In January 2022, Facebook (Meta) shut down the Express WiFi programme.[304] The company declined to provide a reason for its discontinuation. Anecdotally, some ISPs reported that while Express WiFi users were happy to take advantage of the free services provided, tje rate of subsequent conversion to paying customers was not sufficient to cover the expenses incurred in deploying and maintaining the Express WiFi hotspots.

Product launches, press releases and marketing teams eager to make news led to outsized media attention for Google, Facebook, and their partners – but the impact of Google Station and Express WiFi in terms of coverage and population served didn't justify the hype.

299. https://www.tanaza.com/express-WiFi-by-facebook/
300. Baraniuk, C. (2016, 8 August). Facebook tests Express Wi-fi service in India. *BBC News*. https://www.bbc.com/news/technology-37011806
301. IT News Africa. (2017, 8 November). AfricaCom 2017: Tizeti and Facebook to Expand Wi-Fi Express in Nigeria. http://www.itnewsafrica.com/2017/11/africacom-2017-tizeti-and-facebook-to-expand-wi-fi-express-in-nigeria/; Chelagat, J. (2017, 29 March). Facebook Launches Low-cost Internet Service, Express WiFi, in Kenya. *Citizen Digital*. https://citizentv.co.ke/business/facebook-launches-low-cost-internet-service-express-WiFi-in-kenya-162150/
302. ITWeb. (2019, 7 May). Cell C, Free State Ink Public Access WiFi Deal. https://www.itweb.co.za/article/cell-c-free-state-ink-public-access-WiFi-deal/GxwQDq1AGzkqlPVo
303. Adepoju, P. (2020, 27 October). Facebook's Express Wi-Fi Initiative Launched in Uganda. *ITWeb Africa*. https://itweb.africa/content/8OKdWMDYZWoqbznQ
304. Njanja, A. (2022, 7 February). Countries in sub-Saharan Africa Most Affected as Meta Halts Low-cost Express Wi-Fi. *TechCrunch.*. https://techcrunch.com/2022/02/07/countries-in-sub-saharan-africa-most-affected-as-meta-halts-low-cost-express-wi-fi/

By June 2019 – just eight months prior to shutting the programme down – there were only 1,300 Google Station locations globally.[305] By June 2020, nearly five years after their pilot project in Indonesia, only three ASEAN countries had Facebook Express WiFi partnerships: Indonesia, the Philippines and Thailand. Across these three networks, Facebook's partners only had 70,000 monthly active users.[306] These highly publicised ventures followed Thailand's TOT, which had already built free public WiFi into 24,700 villages by 2017, with almost no media attention. In July 2019, TOT's Net Pracharat WiFi had 6.6 million registered users.

Challenges and lessons learned

Politically-driven initiatives may be more focused on news coverage than the long-term sustainability of access initiatives. The combination of relatively low capital cost and the aura of a forward-looking digital vision makes public WiFi provision an appealing option as a political announcement. However, these announcements don't alway take into account the longer term costs of operation and maintenance. A number of the publicly-funded initiatives reviewed in this paper failed or were narrowed in scope due to a lack of long-term funding.

Reading through the hundreds of news stories of free public WiFi announcements over the last decade, there is a noticeable lack of evaluation, impact studies, sustainability analyses and comparative analysis. Of the many hotspots announced, how many remain in operation? What impact are they having on people's lives? The impact stories of public WiFi, such as the experience of a yam trader in Kenya,[307] are rare.

Equally difficult to determine are the relative cost and sustainability of various free public WiFi deployments. For governments, announcements of investments in free public WiFi are often bundled with investments in fibre optic backbones, making it difficult to disaggregate the costs of WiFi deployments. Research ICT Africa's study is the only source to date that compares the deployment and operating costs of free public WiFi projects.

Finally, it is challenging for governments to ensure that free WiFi initiatives do not end up undermining existing wireless ISPs providing low-cost but paid services. Cape Town's open access model seems to have addressed this challenge. The wholesale-only WiFi infrastructure of CSquared in Uganda may be another viable approach.[308]

Further research

Shortage of available public information and research

One thing that stands out in this review of free and public WiFi initiatives is that there is not just a dearth of research into and evaluation of the relative success, affordability and impact of these efforts, but that there is a distinct lack of available public information. This report relies in large part on public news stories about free, public WiFi initiatives. Many of these news stories lean more towards press releases than journalistic output. There has been

305. Kim, C. (2019, 20 June). On World Wi-Fi Day, celebrating a fast, free and open internet. *Google*. https://blog.google/technology/next-billion-users/world-wi-fi-day-celebrating-fast-free-and-open-internet/
306. Abecassis, D., et al. (2020). Op. cit.
307. Namwalo, A. (2023, 17 November). Trader exploits free Wi-Fi to expand yam business. *Kenya News Agency*. https://www.kenyanews.go.ke/trader-exploits-free-wi-fi-to-expand-yam-business/
308. https://www.csquared.com/services/ugandan-market/

surprisingly little effort put into evaluating these initiatives. There is also a shortage of impact stories: the stories of people whose lives have been changed by the availability of public WiFi. We hope that this report provides a useful trail of breadcrumbs for researchers interested in investigating this issue.

What ownership and operational models are most likely to succeed?

Above, we have attempted to create a taxonomy of free and public WiFi initiatives. Most of these initiatives involve some kind of partnership, often between the private sector and a government. These partnerships seem to work best when institutions play to their strengths. Governments can often leverage existing infrastructure to serve WiFi networks, whether ducts, fibre, towers or public buildings. Commercial operators have experience in retail services. In any public WiFi initiative, especially ones with a free tier of access, each partner needs to consider both what they bring to such an initiative as well as what they are likely to get out of it in the short and long term.

Understanding public WiFi costs

A WiFi access point can cost as little as USD 100, although more expensive ones are typically required for public WiFi initiatives. However, this is the tip of the iceberg in terms of costs, which also include the cost of backhaul access to the internet, network maintenance, upgrades, network management, sales and marketing. A benchmark model of costs for public WiFi would be useful for those considering its deployment, but also for those seeking to evaluate existing initiatives. It will be important to look at not just what these projects cost to deploy, but what they cost to maintain over time.

Costs are often complicated by the fact that public WiFi may be bundled into the roll out of other kinds of infrastructure, like fibre optic backbones, making it challenging to separate costs.

Enabling policy and regulation for public WiFi

At a fundamental level, free public WiFi initiatives are dependent on policies in the ICT sector that prioritise digital inclusion over simple market competition. With a digital inclusion mandate, free WiFi projects can be a natural complement to commercial operator and community-centred connectivity providers' offerings. Sharing infrastructure between free WiFi and commercial offerings is common around the world, and frequently enabled through government support.

A policy of transparency should also be part and parcel of such initiatives. It is evident from several examples in this document that public funds were not always spent as efficiently as possible. Publicly accessible data on spending and the deployment of free and public WiFi initiatives would mitigate corruption as well as provide more robust datasets for the purposes of comparing and contrasting such initiatives.

Reducing import duties on WiFi equipment or introducing tax waivers for public WiFi initiatives would lower the capital cost of network deployment.

From a regulatory perspective, expediting homologation for WiFi technologies would allow for the most relevant and forward-looking WiFi technologies to be selected. Maximising the amount of radio spectrum available for use by WiFi technologies would also serve to increase the effectiveness of said technologies.

How much free data?

Across the public WiFi initiatives surveyed, the amount of free access varied dramatically, starting from as little as 50 MB and ranging to unlimited data. Time was also a factor, with some free access services being limited to 15 or 30 minutes. Over time, the amount of data used often strained both access and backhaul resources. News reports on several initiatives mentioned increases in backhaul capacity, upgrades of access radios, and even the shutting down of a project that could no longer keep up with user traffic demand. This common theme of ever-increasing data consumption is an indication that all networks should plan for it, even though the rate of increase may be declining over time. Ericsson's analysis from 2023 predicts annual mobile data growth falling from 20 to 35% per annum in 2024 to 10 to 20% per annum by 2029.[309]

Privacy issues

Most public WiFi initiatives insist on registration in order to use the free service. The level of detail required varies. In some countries, digital rights activists have raised concerns regarding the level of personal information collected by free public WiFi initiatives.[310] Adopting well-established lean data practices may help such initiatives make smart decisions when it comes to data collection.[311]

Gender issues

Most initiatives don't seem to have taken into account cultural factors that may influence accessibility. A growing body of research suggests that, in some countries, social norms that affect the mobility of women may mean that they are largely unable to benefit from public WiFi initiatives.[312] More research is needed into how such initiatives might be adapted to better serve all genders.

309. Ericsson. (2023). *Ericsson Mobility Report: November 2023*. https://www.ericsson.com/en/reports-and-papers/mobility-report/reports/november-2023
310. Monitor. (2016, 4 October). Activists query free government internet, demand data protection law. https://www.monitor.co.ug/uganda/news/national/activists-query-free-government-internet-demand-data-protection-law-1669794
311. Mozilla, an open source browser company, has developed a set of lean data practices which can be found here: https://www.mozilla.org/en-US/about/policy/lean-data/stay-lean/
312. For example: Mudliar, P. (2018). Public WiFi is for Men and Mobile Internet is for Women: Interrogating Politics of Space and Gender around WiFi Hotspots. *Proceedings of the ACM on Human-Computer Interaction*, *2*(CSCW), 1-24. https://doi.org/10.1145/3274395

Conclusion

WiFi is easily one of the most successful communication technologies in history. Every year, billions of new WiFi-enabled devices are manufactured, and they're able to function anywhere on the planet. Phones, tablets, laptops and many other smart devices spend most of their time connected to WiFi, and pass most of their data through WiFi networks.

Given the ubiquitous nature of WiFi, it's obvious that free public access has a role in enhancing digital inclusivity. The technology itself can be inexpensive to deploy and operate. Not requiring a spectrum licence or significant engineering effort, WiFi is the obvious choice when providing easy access to fibre optic assets. It's a technology that people understand, and one that politicians find easy to promise.

It's clear that like many information technology projects, large WiFi initiatives are not immune to implementation failures. Once built, it can be hard to understand WiFi's real impact in bridging the digital divide. Most projects judge their success by the deployment of a network, and not by whether that service enabled people who might otherwise have had limited or no access.

Financial sustainability has been a problem for many significant initiatives. The true cost of many projects may never be accurately assessed, especially when parties in PPP arrangements contribute a mix of assets, cash, property and services to a network.

What is apparent is that multi-function initiatives are more likely to be sustainable than WiFi-only ventures. When government workers can access WiFi data on the go, they can be efficient in their jobs without incurring the expense of mobile data. When smart city assets like cameras and sensors can use WiFi data for backhaul, they reinforce the business case for public WiFi networks.

Across the countries profiled here, there are public WiFi initiatives with tens to hundreds of thousands of access points in developing and developed economies. These projects show us that it's possible to build national-scale free public WiFi. Heeding the lessons learned across both successes and failures could be key to the successful planning of the next major free public WiFi network.