

About the APNIC Foundation

APRICOT 2023 / APNIC 55 January 2023



Overview of Foundation programs and projects in 2023 - Duncan Macintosh, CEO

ISIF Asia and project updates – Sylvia Cadena, Head of Programs and Partnerships

EcoInternet Index – Edmon Chung, CEO Dotasia Foundation

Update on the Switch! Gender and Diversity project – Mia Perez, Switch! National Coordinator for the Philippines

Facilitated by David Dawson, Senior Communications Coordinator



Overview of Foundation programs and projects in 2023

Duncan Macintosh, CEO

The APNIC Foundation

PROJECTS

SWITCH SEA

PacTraining

ISIF Asia

VISION

To have a global, open, stable and secure Internet that is affordable and accessible to the entire Asia Pacific community

MISSION

To increase investment in Internet development in the Asia Pacific region, through education and training, human capacity building, community development, research, and related projects and activities

2021 Annual Report



Investing in Internet development

Some examples of what the Foundation's fundraising efforts focus on:

- Technical training
- Increasing diversity and inclusion
- Network operations research
- Internet infrastructure research and deployment
- Research and Education networks



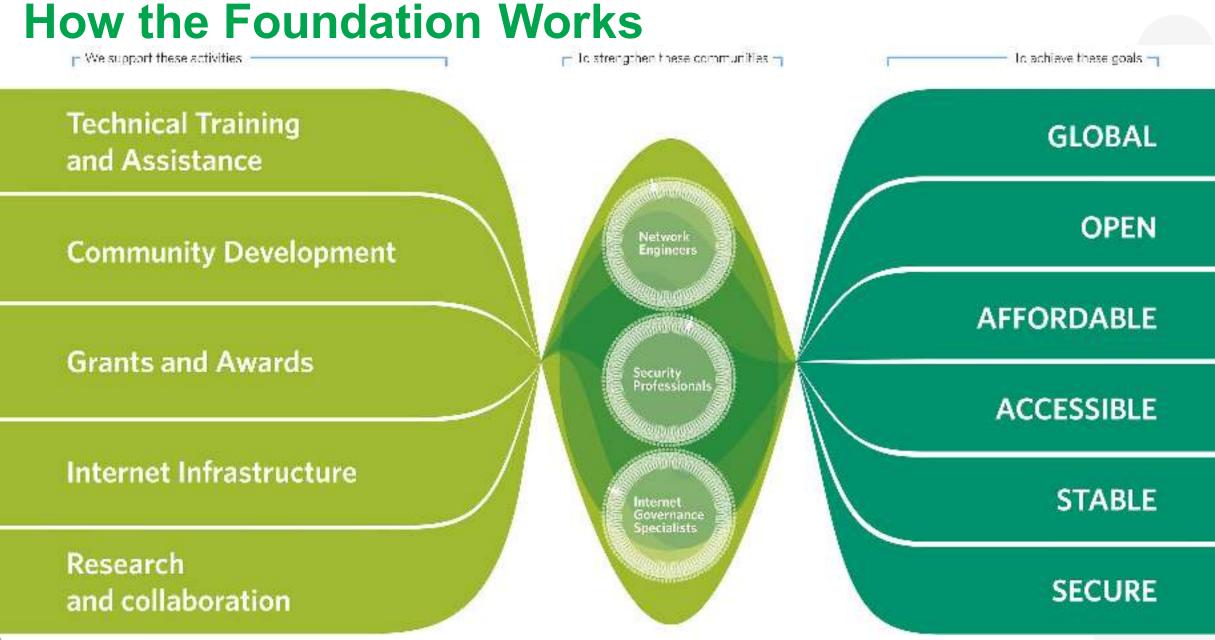














Strategic Plan

Strategic Pillar	Objective						
1. MEANINGFUL IMPACT	 INFRASTRUCTURE - Strengthen and support the deployment of Internet infrastructure and deploy tools for operational infrastructure security and monitoring 						
Enhance levels of knowledge, infrastructure development and inclusion within the Asia Pacific technical community	B. INCLUSION - Support/enable the Asia Pacific Internet community in providing meaningful and efficient access to the Internet, from a technical and operational perspective						
	C. KNOWLEDGE - Enhance technical and operational knowledge contributing to an informed and collaborative community						
2. TRANSFORMATIONAL ENGAGEMENT & PARTNERSHIPS Raise awareness of Foundation activities through engagement & collaboration. Foster productive partnerships to support Internet development	A. Build and support targeted communities so they sustainably grow and develop independently						
	B. Collaborate in program design and project delivery to ensure meaningful impact, shared value and ongoing improvement						
	c. Engage with the Internet development community to promote key issues and priorities						
	D. Increase and diversify the Foundation's funding and resources by engaging with existing and new partners/investors in support of Internet development						
	E. Expand the Foundation's profile/influence/reputation and capabilities/expertise through proactive communications and networking opportunities						
3. HIGH PERFORMANCE	A. Strengthen program quality and evidence base						
Deliver best practice people, finance and business systems that support the Foundation's operations.	B. Implement equitable, accurate and efficient process and systems						
	C. Provide efficient and robust governance, finance and business services						
	D. Deliver an engaged employee lifecycle experience						



2023 projects

Partnerships

APNIC

- Capacity development (Academy, Training Delivery, Community Trainers)
- Infrastructure support (M-Root and IXPs)
- Community building (NOGs, CERT support)
- Research (Honeynet, measurements)

Keio University

- SOI Asia
- AI3

Foundation

- Switch! Gender and diversity project in 6 South East Asia economies
- Afghanistan training and mentoring
- Information Society
 Innovation Fund (ISIF Asia)
- Foundation grants



ISIF Asia and project updates

Sylvia Cadena, Head of Programs and Partnerships

Foundation Programs

(()) INFRASTRUCTURE

Efforts to increase Internet speed, reduce maintenance and operational costs, improve reliability and/or security from a technical and operational perspective.

Network deployment and operations Network monitoring and management Security and privacy





Foundation Programs



Efforts to ensure that everyone has meaningful and efficient access to the Internet, online applications and services, from a technical and operational perspective.

> Availability of connectivity Internet access affordability Accessibility Diversity





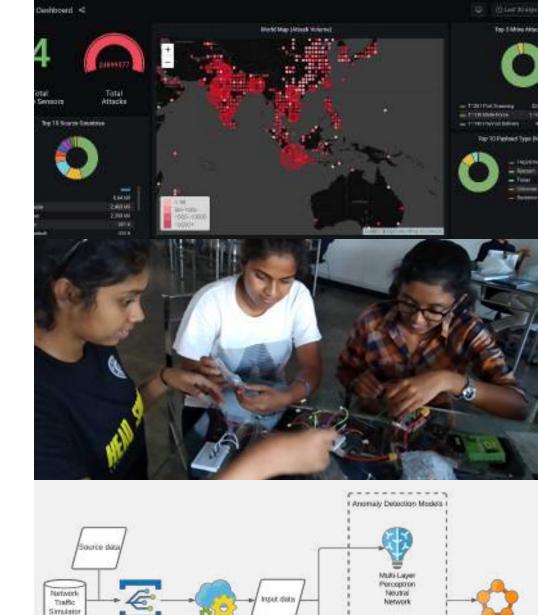
Foundation Programs

KNOWLEDGE

Efforts to develop technical capacity and/or research around Internet network operations, from a technical and operational perspective.

Professional development New information and training resources

Translation of knowledge resource into Asia Pacific (APAC) languages



Data percautio

performance

Advensarial Reinforcement Learning



Funding mechanisms available to the community



ISIF Asia Open call for proposals opening soon



Foundation Grants



Trust Discretionary Funds





isif 🕸 asia

- The APNIC Foundation's Information Society Innovation Fund was established in 2008
- The fund is available for APAC organizations that research, design and implement Internet development solutions
- Stay tuned for 2023 Call for Proposals

ISIF Asia grant recipients in The Philippines

- Institute for Social Entrepreneurship in Asia, Inc (ISEA) (Philippines) IN PROGRESS: Building a model for community networks linked to social enterprise and sustainable local economic development
- CVISNET Foundation, Inc. (Philippines)
 IN PROGRESS: ISLET Connect
- Davao Medical School Foundation (DMSF) (The Philippines) IN PROGRESS: Internet connection to four villages in San Isidro
- Ateneo de Manila University, Philippines COMPLETED - <u>UAV-Aided Resilient Communications for Post Disaster Applications: Demonstrations and</u> <u>Proofs of Concept</u>
- Access Health International (Philippines) COMPLETED - Integrated maternal and child healthcare delivery and training for community health teams
- Foundation for Media Alternatives (Philippines) COMPLETED - Promoting women's rights and safety online: addressing electronic violence against women (eVAW)
- SynapseHealth (The Philippines) COMPLETED - <u>Health, emergency and disaster information using mobile and virtual earth technology</u>



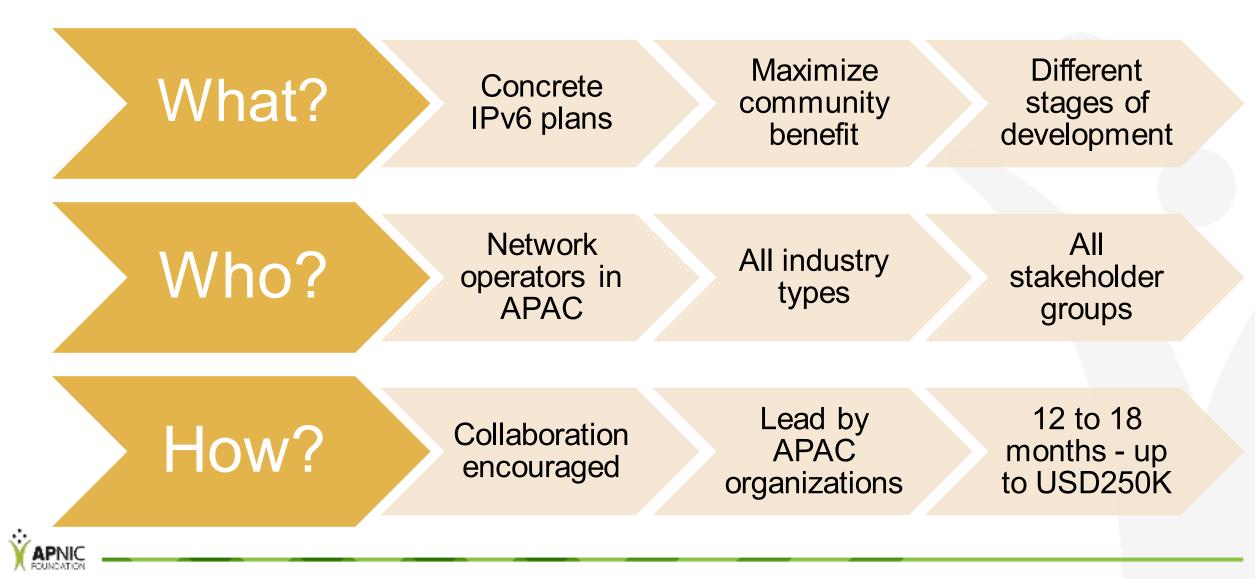
Funding types



Small Grants	Scale-up Grants	Impact Grants	Deployment Grants	Awards	
New ideas Proof of concept Prototyping	Addressing challenges around growth / expansion	Expanding community benefit beyond initial targets	IPv6 deployment plans in different stages of development	Outstanding Community Contributions	
Research USD 30,000	USD 85,000 Including organizational capacity support	USD 150,000 including organizational capacity support	Variable grant size from USD 30,000 up to USD 250,000	USD 5,000	



2023 IPv6 Deployment Grants open and accepting applications



2022 IPv6 Deployment Grants

Boom!, Micronesia: USD 250,000

Boom! Inc. is currently allocated a /23 IPv4 and a /32 IPv6 address block.

Half of the IPv4 address space have been exhausted through the design of the internal core infrastructure along with deploying several key customer networks.

This project will solely focus on improving the design of the backbone infrastructure and IPv6 address allocation, and adoption of best practices for small to large scale customer deployments, with all testing being conducted at their enterprise lab network.

Tonga Communication Corporation, Tonga: USD 250,000

TCC has successfully deployed IPv6 to their fixed networks back in 2018 and adoption is slowly progressing. The project will support the infrastructure deployment to their Mobile Networks as well as support for their billing system to be ready for future 5G network deployments.



2022 IPv6 Deployment Grants

National Institute of Technology Karnataka, India: USD 240,000

NITK Surathkal's campus network migration to IPv6 (45000+ terminals to the Internet with 350+ switches, 1200+ indoor/outdoor WiFi access points and a dedicated data centre hosting firewalls, core switches, web and application servers, servers for DHCP, DNS, IPAM, NAT, network management and monitoring)

- Security auditing/planning and mitigating risks
- Converting web services and applications
- Test, validate and monitor network performance and security

Universitas Islam Indonesia, Indonesia: USD 60,000

Accelerate IPv6 deployment at schools, higher education institutions, and research organizations, through an SDN-based implementation



Ian Peter Grants for Internet and the Environment

Focus Areas

- Inclusion: Support for Indigenous and grassroots organizations working on environmental issues to enhance their work through increased Internet availability
- Infrastructure: Hardware and software development, and/or deployment to understand and address the environmental impact of Internet infrastructure
- Knowledge: Technical research that supports policy development around Internet technologies and climate change

- ISLET Connect CVISNET Foundation, Inc. The Philippines. USD85,000
- Early warning and communication system for flood risk reduction in Gilgit-Baltistan - Lahore University of Management Sciences. Pakistan. USD85,000
- **IoT data-driven water management for climate resilient communities** - Similie Timor Lda. Timor Leste. USD85,000
- EcoInternet index DotAsia Foundation Ltd. Hong Kong USD30,000
- Tackling climate change misinformation -Faculty of Social and Political Science, Center for Digital Society. Indonesia. USD30,000



ISLET Connect

CVISNET Foundation, Inc. The Philippines USD 85,000

- Provide a stable broadband Internet connection to 3 islands barangays
- Provides a reliable solar power communications facility
- Establish a web portal that provides both online and offline information around livelihoods, learning, ecotourism and disaster risk reduction
- Introduce a sustainable community-based support operations
- Can be easily expanded and replicated in the nearby islands





The EcoInternet Index

Edmon Chung – CEO DotAsia Foundation

EcoInternet Index: Towards an Eco-Friendly Internet

Edmon Chung | 2023.02.27 | APRICOT Manila

WWW-BSI3 Asian #InspirAsian

• • 2 6 9 0 0 0

asia #RiseWithAsia

What is ".asia"?

www.domain.com



Every .Asia Domain Contributes to Internet Development in Asia





HEINRICH BÖLL STIFTUNG











Q

Q



Factcheck: What is the carbon footprint of streaming video on Netflix?



EDITORIAL CALENDAR

Events



Webinars

Software Directory

Calculating the Pollution Effect of Data



Who emits					North America 6.5 billion tonnes CO, 18% global emissions		Europe 6.1 billion tonnes CO, 17% global emissions EU-28		
the most CO ₂ ?				2.5 billion tonnes 6.8%	5.3 billion tonnes CO, 15% global emissions		3.5 billion tonnes CO. 9.8% global emissionis		
						Canada	Mexico	Russia 1.7 bition tornes 4.7%	
	Japan 1.2 bilion tonnes 3.3%	Saudi Arabia 635 million tonnes 1.8%	Thailand 331M tornes 0.9% Kazakhstan	UAE 232M torre 0.6% Vietnam	lrag	573M tonnes 1.6%	490M tonnes		D. one. Sector of S124 (s)
	Iron	South Korea 616 million tonnes 1.7%	Talwan 272M tomas	0.55% Qatar 1304 tirrus 0.4% Philippines 0.8%	CONTRACTOR Contractor Contra	456M tannes	Record Argentina	Australia Anavi t 1, st. A ship 1, st. 15 bi 1, 25	ational aviation ping lon formes
	Iran 672 million tornes 1.9%	Indonesia 489 million tonnes 1.496	Malaysia 255M formes 0.7%	HOLENDARY HOLENDARY CLIMA Underkister Underkister Underkister Underkister Underkister		Egypt 2184 cones 248 Algeria 1510 cones (0.4%)			
					1.3 billion t 3.7% globa	Africa tonnes CO, I emissions	1.1 billion tonnes	erica Oceania s CO., 0.5 billion t isions 1.3% globa	onnes CO.,



Group of Advisors:



Cassian DREW

Managing Director, Inclusive Growth Advisor on COVID-19 Economic Recovery, UNDP



Kavickumar MURUGANATHAN Sr Manager, Asia Datacenter Sustainability Policy, Microsoft



David JENSEN UNEP Head of Environmental Peacebuilding





Desiree MILOSHEIC International Affairs and Policy Adviser at Afilias Former Special Advisor to the Chair of the UN IGF MAG

Anna MOORE

Sustainability Consultant and Partnerships Manager, Eco-Business





Kathryn SFORCINA

Global Head of Strategy, IV.AI Co- Chair, UN IGF Policy Network for Environment and Digital

Sang Min SHIM Visiting research fellow, Sejong Institute Former Assistant Professor of Korean National Diplomatic Academy







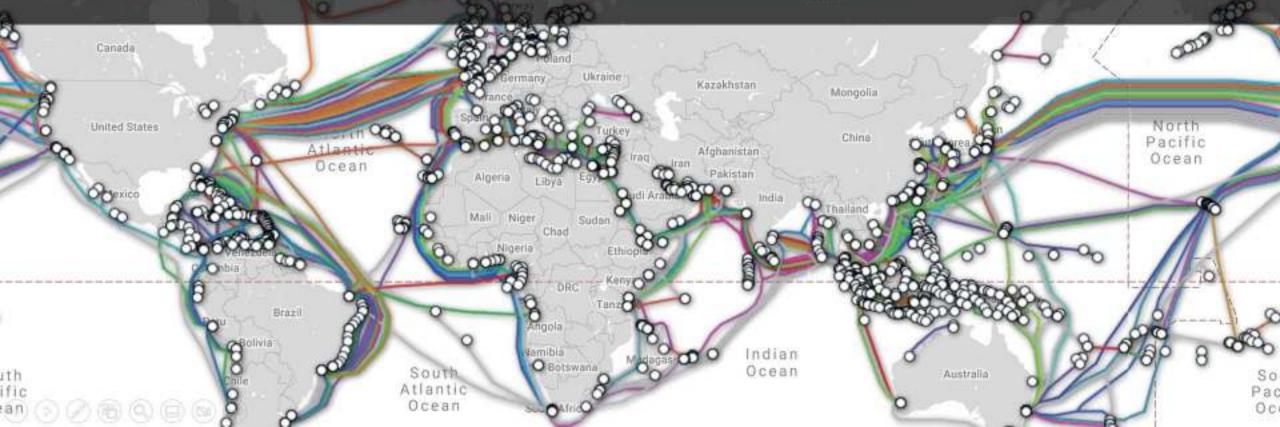
Internet Footprint vs. Physical Footprint





The Power Grid as a Critical Component

Capacity & Bandwidth of the Infrastructure





.....

•••

 \Box

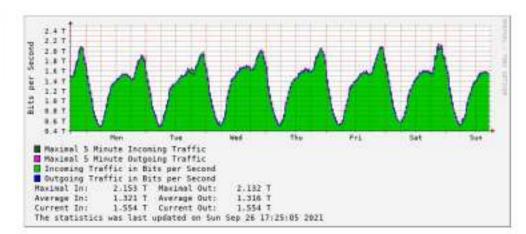
.....

.....

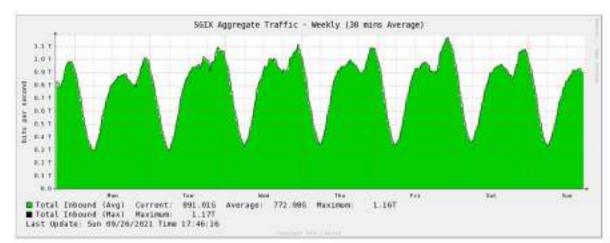
-

Variances (Peak & Troughs) in Internet Traffic Patterns

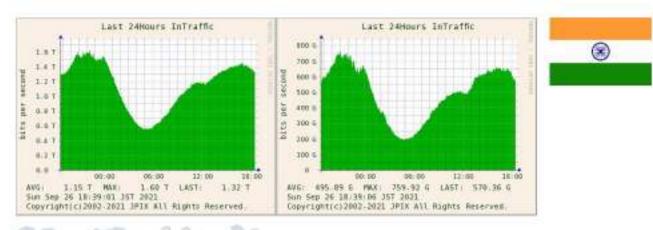




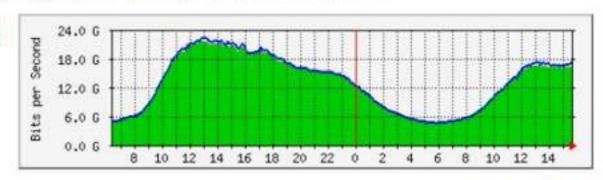




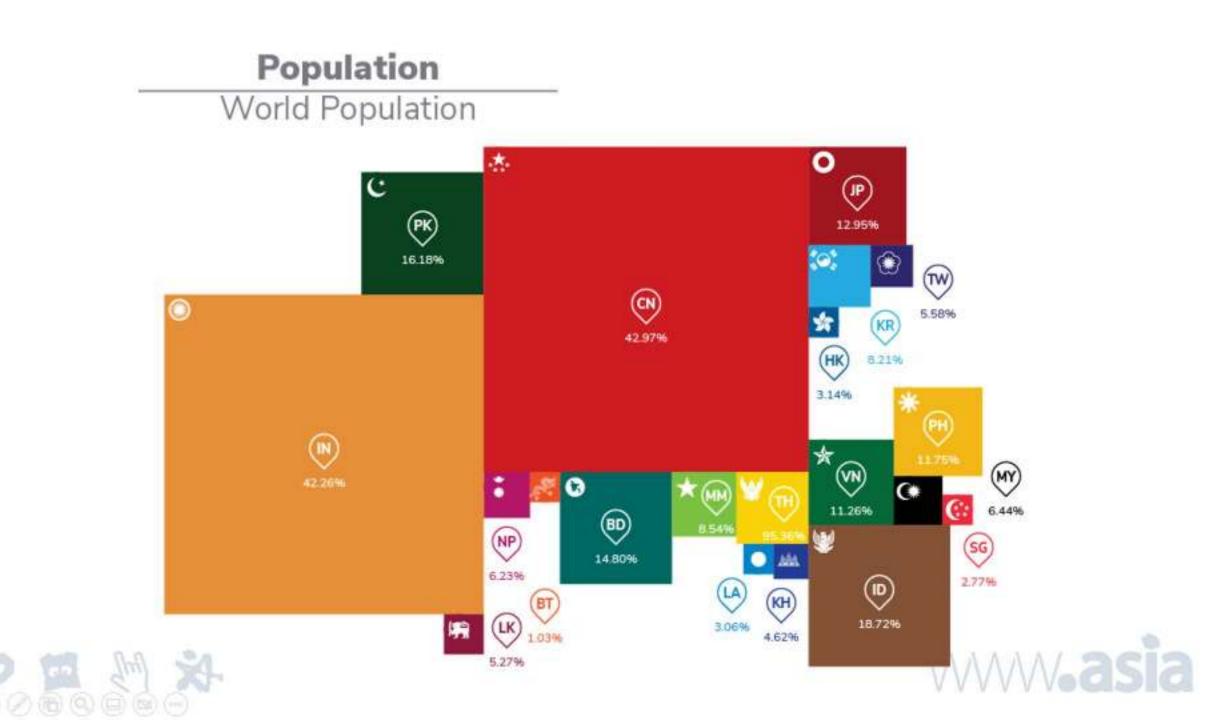




Aggregated traffic graphs for all locations



www.asia



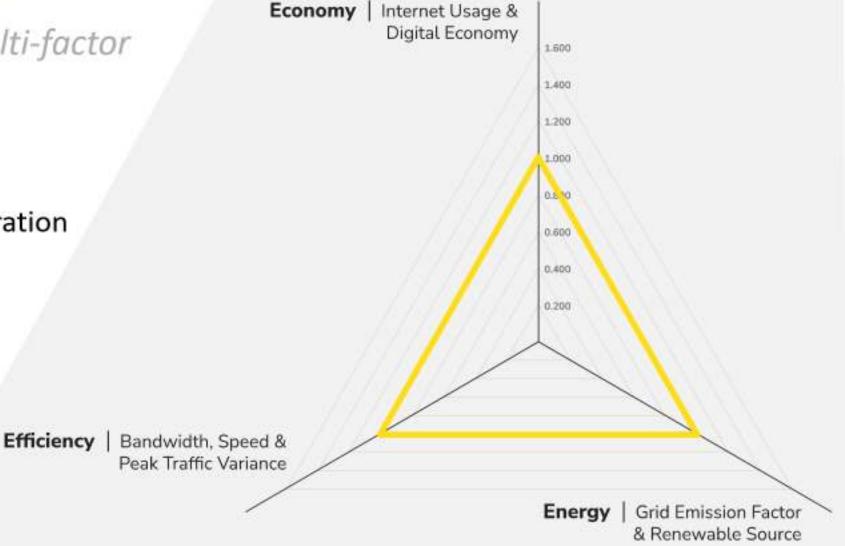
Internet Population

World Internet Population



Additional Indicators

- Towards a composite multi-factor index
- Economy
 - Internet Usage patterns
 - Digital Economy Consideration
- Energy
 - Grid Emission Factor
 - Renewable Sources
- Efficiency
 - Network Capacity, Speed & Variance



Economy

 Carbon Footprint of Internet Activities vs. Digital Economy

Carbon Footprint of Internet Activities

Total Carbon Emission

ICT Services as % of Total Trade in Services (Export + Import)

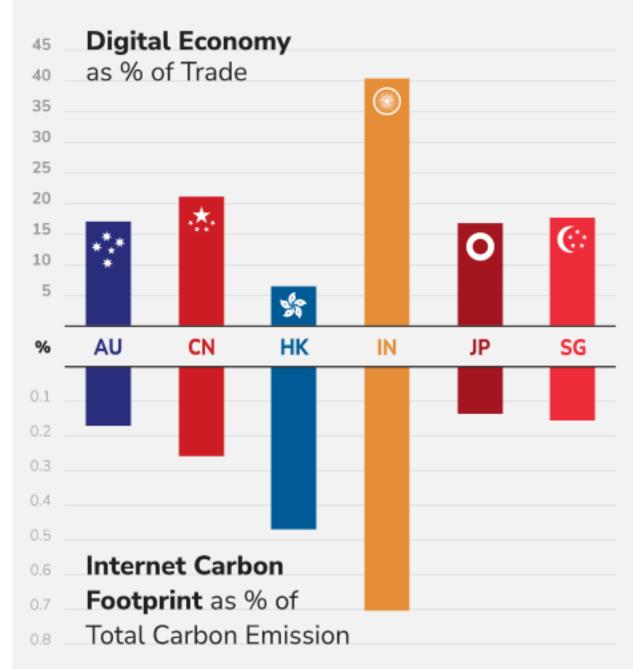
• Data Sources:

🖉 (6) (9) 💷

Local authorities & providers +







Energy

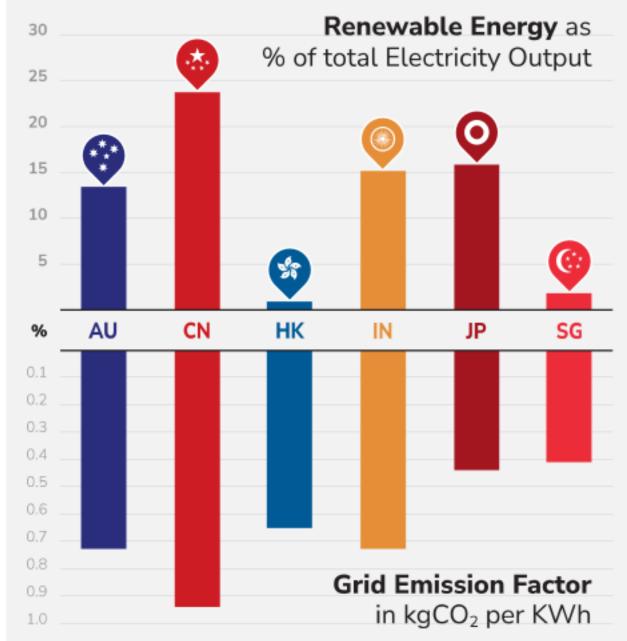
 Grid Emission Factor and Renewable Energy Source components

Grid Emission Factor (kgCO₂/KWh)

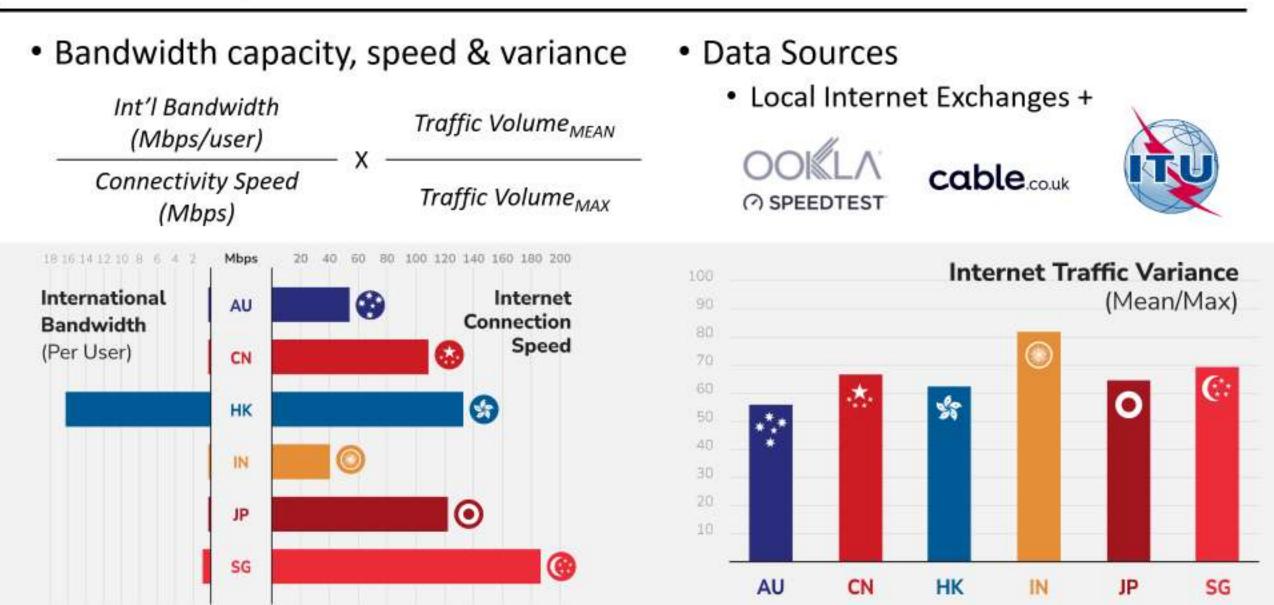
Renewable electricity output (% of total electricity output)

- Data Sources
 - Local authorities & providers +





Efficiency



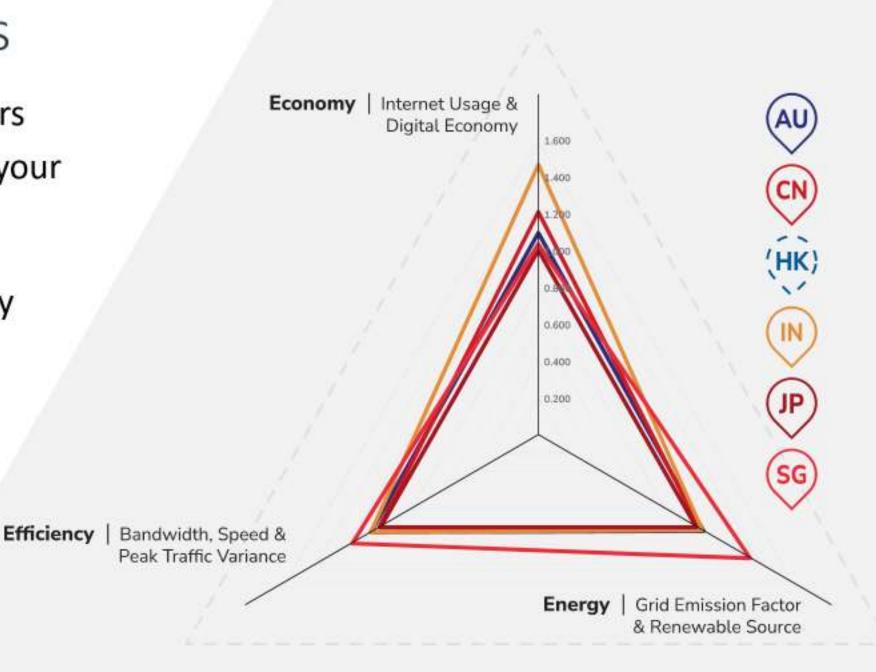
Eco-Internet Index (EII) Pilot Study Scores

	Economy		Energy		Efficiency		Composite Index	
	Normalized Score	Rank	Normalized Score	Rank	Normalized Score	Rank	Composite Score	Rank
AU	1.094	3	1.045	4	1.063	3	0.992	2
CN	1.209	4	1.020	2	1.010	2	1.012	3
HK	5.000	6	5.000	6	5.000	6	21.773	6
	1.466	5	1.034	3	1.066	4	1.214	4
₽	1.000	1	1.000	1	1.000	1	0.871	1
SG	1.037	2	1.341	5	1.181	5	1.219	5

www.asia

Core Narratives

- Carbon conscious users
- The grid that powers your Internet
- The digital economy advantage & efficiency
- Do more, waste less







EcoInternet Pilot Study Report 2021

The COVID-19 pandemic unequivocally demonstrated that the Internet is and will likely continue to be the core and



3

2022-2023: Expanding across Asia Pacific

HEINRICH

STIFTUNG

BÖLL

- 15-20 Economies
- Refinement of methodology
- Connecting with Stakeholders



Every .Asia Domain Contributes to Internet Development in Asia

Thank You! | info@dot.asia

WWW.asian #GenerAsian

an Ini

Update on the Switch! Gender and Diversity project

Mia Perez – Switch! National Coordinator for the Philippines

Switch! – diversity in the Internet Industry





145 women and **16** gender diverse professionals receiving professional development



Covering Cambodia, Laos, Thailand, Timor Leste, The Philippines and Viet Nam



166 training providers, **1480** enrollments, **416** courses complete and certifications achieved

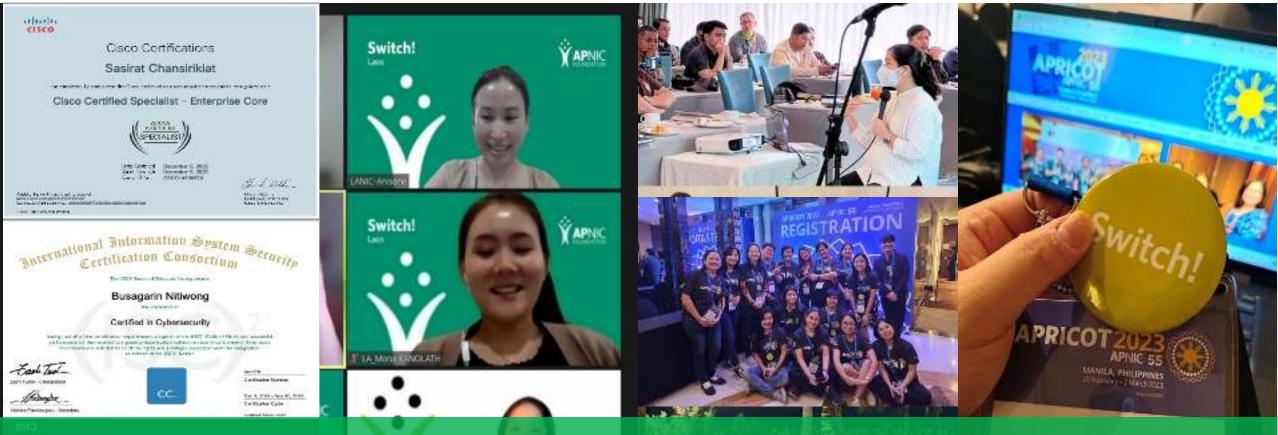


124 participants sharing knowledge and expertise, including **14** technical research projects in progress



6 FtF national events + **6** delegates APNIC54 + **27** delegates APRICOT 2023/APNIC55

Switch! – diversity in the Internet Industry



Certifications for network operations, cybersecurity achieved, and professional development 60 participants received mentoring support 124 participants reporting increased activity around networking and visibility of their professional contributions

27 participants received support to attend APRICOT 2023 / APNIC 55 across workshops, hackathon and conference

Switch! - National Events



Networking events were organized in **Cambodia**, **Laos**, **Thailand**, **Timor Leste**, **The Philippines** and **Viet Nam and were** attended by 137 participants out of 203 Switch! and Switch SEA participants from 2021-2023



Switch! - participants research outcomes

- 2 published papers
- 12 ongoing

to Data Not. Wagen Ven Thing, Going The Mast

ENERGY HARVESTING BETWEEN UAVS FOR BACKHAUL CONNECTION

Le Tung Holk Housen van Titlang, Oang The Hook. Whelein Gystems and Applications Laboratory Produced Telephone a location of well-doted Televisions

increase increases to both of control ways on make it wanted in here a LOG 3 phi of spin constants and spinlar a batter is between the second distances and entropy frames have been averaged to assume that share device 1999 maps for an entropy of a proposition internet worked which constrained a strained share and a OVM internet strained 1077 is a consistent to a much by a Provingets while the minimum energy and this over transmission was not optimicommunication. The tensor $1\times 4N$ is word in tensor space that the first tensor is the DAV as the egg and matrices that transferences of FrO Des more schief, companies of the couple on the energy indexes a deal of main a plan Mill Conceptuage The conversion serves a substantial for a sufficient test, as well as a suspension of pairway compared from the DAV and the PRO to capture which and better to 190 be words record photomers, and an anti-photo-size when strategy and said internet

Separative energy becoming, COV, others: HOV. Mod (restricted out

1 withonexmos

The second by their plantic "School ogs has they alof equals of our lives. The anticides have of starysoluble artively generations have 30 to 40 her places. ighthrough our more informeries and a single hour anoded to during the schedule day prover approximation provide the second schedule of the sche reprintingly the tool, only second 40%. How we say 1171 processing the let and of 2011, have below providand provable of the treater are many produc-applications. Recards, we have readed through our of - opposition, for study, the large transition structure of a product of the states, the second of the random 200 (1956) or 400 forms of the state region of 10% the superstate rescaled in a second state range of the state of the states of the range of the other states (range there is not the state of the states). provines where grades in and as well also, again places and other distance. The outpart is supported with sizes to require the approximation are well after some vested make at these area. There is a property to be been not obtain by the momentum respect of the way further interaction of the state 7, 3019 has priorided some specifications to anoth \$2,930

robuton Space of Ing Inc. denote the start Manual control (Ing Inc.) 1962

distances and

Alarvas 10W (Bernard Ardal Volidi) tai, alto contain of the observe 2), and the end of the OV (We can anticipate the observe interview). das ar den niege einen schaussges, die beiner straatel gest ig-ief UNs und andere setwork beinen, ihren advantatier tear many title and of the state of Arrowsky Mr. (see Review TWP using senates with some problems of college hitshifted, and beckhard chemicked. Therake to fiand type of UVV, referred UVVs, they have been releval states in production.

Tollensy CarNaret DeVictorian States where their The cheres day of banks, UVA has lifted many consists which bankswell Detracharys has Proving some off or the controls were agin and area pound to UVA. It particular satisfies derivation and mercura fore reductor and persistence formally reducted to make it search to mandot all the designed data for tables DWA and he was fee that the generations with high data take regard weats. The set , for taken of left a visit the trans-

and the compared with antidexed (Weight, One-share) (DeV) are more familie in we 100.00 By any probability of the set WWW. Diversity of a solar source of post-time and the Ref. is an experimentation of the Westmann for provide an additional in a subsection, and the world (1999) report for any data subsection, is a first of the part of the subsection of the subcontrainer with open anticipant and interval (WV). We have prior to an or interval provider spectra and the suggestion which to be a the polynomial CV definition is well-than assume to which which and polynomial the manufacturing of a to an entropy of the second seco the last between sciences are satisfied and W.V. in an order for data met sciences propagate. But they does not science and the set of Construction of the community of the set optical from and the set force with the set many resonances of models a basic science for the restance of the set output and provide science and the set of the set of many science of the set 440003981054

Some allo secondary have been in a information in a section of equiling a variable constant, in the section code, where constants and addressed variances with a first taken of a The benchmark for an exchange without the source are linked and the functional limits are however, DWV and ground and the reschard finite are between DWV and proved increasing on support the sections for both conducted throughput of the synchronization, one paper has been manipued advecting DWV. In static day which framework advecting the manual [1], may example their finite sections of the section [1], may example their finite sections.

DWVs adv to an different space or spottice energy. The

Image Compression using Discrete Cosine Transform Souther behaviores of Ventil', Cereian Chest's Represented Officients & Veneraling, Contractive and an Africa Scienting of Den Ind. Controls intraction tractages many part that and in Highland Presand Charmen desides Neowitek Cashella industry and a second state of a second

clocker - In recent years, the demonst of an line time in and a short a part of an and the maximum plasts with the same impy His are burning fiel, racing to buildent, inclusion should simplify an analysis defailed at any strange of messary device and does for does intervaluates. The risk can be previously place to be compared of me Therefore, compression baseling many and many solvers arrange but a base respect of solvers in the press algobilities, an image compression is defined as an interface [1] influences are not solve of emission collegator. application that compresses data in digital surger. Digital surgery is solved to multiple of site separate to economic tanget are comprised with target answer of information, using of station for my index, the market of the transtheir explore tagget tracteristic The techniques of using e-pits have be value of an energy should be because, the samplements are to generally adopted in the large e-th them have buildy, the should sample way had we have indice and long technique. It is an application of data, which is the next secondly with him part cales. The subgrowthe data county the original range with the later of a data was prepared by the first AA. But now in 1929 (2), in met neuroper de text nu dans part l'he lenge da calcin des trestes 👘 Ut restar, des partes est a gar des seus tadas part in losis. This means that as longy where a flatter pitch. Our reduce. It is size by allocating the late reporter, have alcosed the some values loads to spartial redunctions. It depends to make that a list part is too is arrived In this paper, we are paragree regions theoretical and to achieve a significant bit the collection which is called practical indice of single composition to well as "Trenchers Collis some Diserts Cole: Transfer DCD sometations. The principal goat of the project a na Discret Darky Institut (DIT). Therefore roking is a apply the Decrete Course Transform (DCT) technique to explore of ecceding an image) transform coefficient by compress other 1954 marger and programs image to evolve protection of disposing the marge image data with other in event the projecty results. The program for the inclusion inclusion and expect hands and events replex onling and exercises do DCT algorithm of larger to the device previouse of magnitude to teacher and the compression is WATLAN. The much shear dust site space, the original tensored integration are be even if y algorithm can end on the grades with merrary particulary. It will lied, forware and imaged metaleneously before any septil, comprision cooling can be accorrolished to comprise strand 21 %, with according analysis the coefficient that as done to "C." The lost of indexate

Conversion Carlo Carl suppose of N catalog hadren into another requirement. trangés subler depet (public) écuada, véres las lat-

 Indiana de sector extremation informations from the first [2]. If which is defined conduct We meaning belook, you are set of data to moved the convertey to be the to take of our to represent the and do at a scalar agreep underly. Compare the model downly be adving to show division in these of president in Chapter relating the meet as server relation much in and using Property therefore elements to [4] whereas mean structured when the other states appear to expression to DCT is a sector that transforms integra from the spart to consist for profession and expertence of wavelees down to be beginned and an early and an entry evolution there compression is a minor of the same share of early down in the second profession of the compression for a second profession of profession and and firstly and decompression there are not the latter of a spectra better bridge data to profession and and firstly and decompression the same manual latter of a spectra better bridge data to profession and and firstly and decompression the same manual latter of a spectra better bridge data to profession and and firstly and decompression the same manual latter of the same data to an and the same data to a second secon completion scherous physical and it and of tigerifits their estatement iterate[7]. Hallman Casting, Fair Cargh Casting, Davidy, every simpler — Zenerski gar 2 (Chastry et al.(2011) and Q.) Endowi an increase shape casta of a logo number of the barrier de attach. Int 2020; the diverse Frenker chastlese related barrier to a 2020; the diverse Frenker chastra of the barrier de attach.

Constant of the Constant or provide the constant in table in perspectition of DCT Accounts complete dependenced matemany constant versions up have at an inclusion products for constraint process (1994). In the recently of S. A. Delendert men an ming frantises, do to be to be when a size or size of \$100.5 with using District Codes Transform schaptistics. the limit of Meanwhile, maximum regime to it seefford that recompts, causarial at a to compute and recurs the ate of









INFORMATION OF THE STREET HERE DON'T

Switch! - Participation in technical community events



Women: Thailand Cyber Top Talent 2022 Switch! at SOIAsia

KHNOG

Viet Nam Internet Day

Stay tuned for more news!





https://apnic.foundation



@ApnicFoundation



APNICFoundation



apnic-foundation



https://bit.ly/3A8qDJD





https://isif.asia

@ISIF_Asia



ISIF.Asia





Questions? Let's discuss!