



HOW

UNITED NATIONS GLOBAL GEODETIC CENTRE OF EXCELLENCE

MODERNISING GEOSPATIAL REFERENCE SYSTEM CAPACITY DEVELOPMENT WORKSHOP

Identifying capacity development needs in geodesy for the region

Ryan Keenan
Senior Consultant for UN-GGCE

Day 3, Session 3 [3_3_1]

Acknowledgements: Albert Momo (USA); Andrick Lal (SPC); Vaipo Mataorta (PGSC); Meizyanne Hicks (PGSC); Eva-Marie Unger-Morscher (AUT); John Gitau (NIG); Zuheir Altamimi (FRA); Ryan Keenan (AUS)

Summary

- There are many international and regional organisations available to assist build capability.
- Building networks and collaboration with regional partners is a catalyst for capacity development.
- Asking for help is not a weakness.
- Be clear and objective about what you are asking for.



**STRONGER.
TOGETHER.**

Overview of Capacity Development

What it is and what forms does it take?

Why is it needed?

How it does it happen?

Who initiates it?

Case Study examples (Country and Region)

Useful Links, Insights and Resources

Communications and Marketing

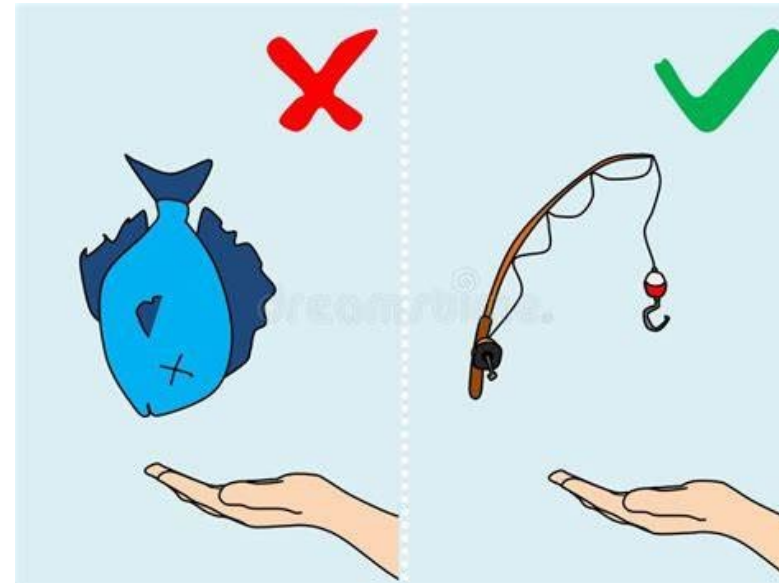


**STRONGER.
TOGETHER.**

Capacity Development - What and Why?

What is it? It is assistance (formal and/or informal) comprising....

- Resources
 - Human
 - Fiscal
 - Equipment
 - Expertise
 - Data
 - Policy
 - Time



Why is it needed?

- Because an 'organisation' may not possess a sufficient amount of resources (or capability) to do it by themselves
 - It can also be stated as 'lack of capacity'
- Because groups wish to learn, network and collaborate

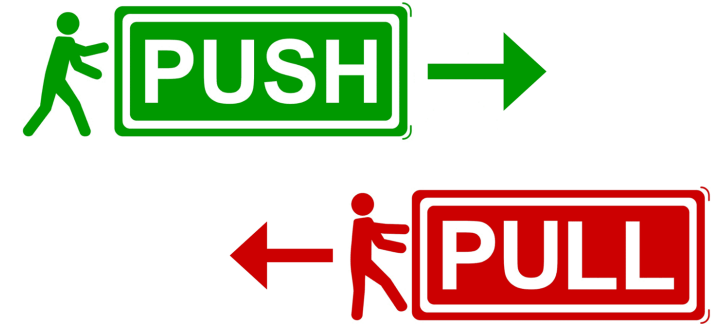


**STRONGER.
TOGETHER.**

Capacity Development - How and Who starts?

It depends

- Those with the spare capacity, can offer it to the community (..PUSH)
- Organisations requiring it, can request it (..PULL)



Often summarised as:

- Knowledge transfer
- Capacity Development (CD)
- Education, Training and Capacity Building (ETCB)
- Outreach and Engagement (OE)

Not all capacity development is between two parties
... it can also be 'Inreach' - internal to an organisation



**STRONGER.
TOGETHER.**

Capacity Development - Geodesy Crisis

Geodesy Crisis

- Lack of geodesists?
- Lack of resources?
- Lack of funding?
- Lack of support?
- Lack of interest??

All of the above! Plus more!



**STRONGER.
TOGETHER.**

Capacity Development - Some Sources

Various Examples (internal and external)

- Institutional / Agency
 - United Nations - UNDP; UN-GGIM; UNOOSA; UN GGCE;
 - World Bank Group
 - Development Banks - ARDB (Asian Regional Dev Bank)
- Academic
 - UN GGIM Academic Network
 - IAG Early Career Scientists
- Corporate and Foundations
 - The Gates Foundation.....
- Community of Geospatial Science and Associations
 - IUGG, IAG; FIG

More information in the Business Cases session



**STRONGER.
TOGETHER.**

Capacity Development Sources - Institutional Risks

USAID disbursed US\$72 billion in fiscal year 2023, the most recent full year for which information is available.

USAID was suspended in January 2025..... This action has triggered global repercussions, with unknown consequences both in terms of scale and coverage

An official website of the United States Government [Here's how you know](#) ✓

2021-2025 ARCHIVED CONTENT

You are viewing ARCHIVED CONTENT released online from January 20, 2021 to January 20, 2025.

Content in this archive site is NOT UPDATED, and links may not function.

For current information, go to www.state.gov.



U.S. DEPARTMENT of STATE

[Newsroom](#) [Business](#) [Employees](#) [Job Seekers](#) [Students](#) [Travelers](#) [Visas](#)



[POLICY ISSUES](#) [COUNTRIES & AREAS](#) [BUREAUS & OFFICES](#) [ABOUT](#)

[Home](#) > [Office of the Spokesperson](#) > [Press Releases](#) > The President's Fiscal Year 2024 Budget

★ ★ ★

The President's Fiscal Year 2024 Budget

FACT SHEET

OFFICE OF THE SPOKESPERSON

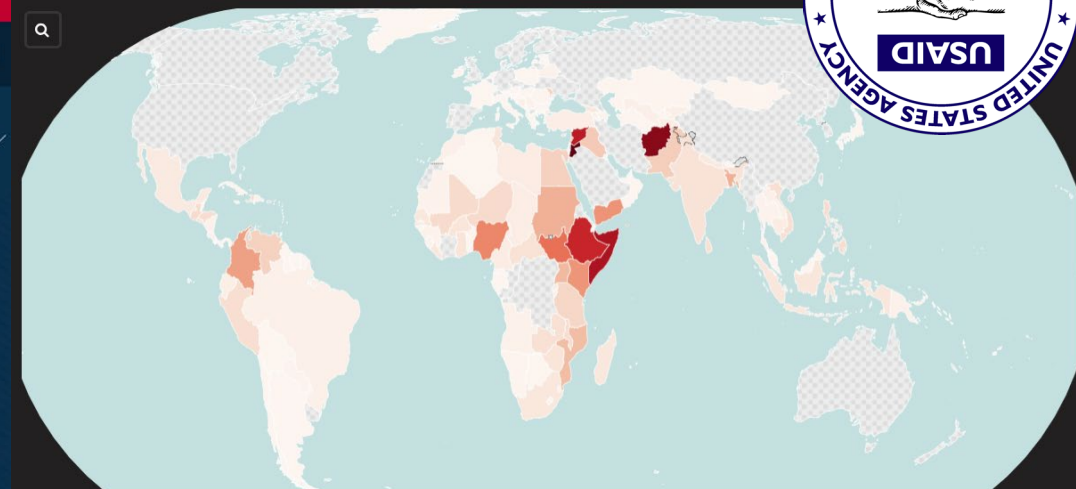


MARCH 9, 2023

USAID Distribution

Disbursement 2023

8568 1,197,604,198



Source: [U.S. government](#)

<https://www.newsweek.com/usaids-map-counties-most-money-202507>

The Budget makes critical, targeted investments in the American people that will promote greater prosperity and economic growth for decades to come. At the Department of State and USAID, the Foreign Affairs Budget will

**STRONGER.
TOGETHER.**

Capacity Development - Case Studies

The following section will feature examples of CapDev in different countries and regions

Purpose is to provide:

- **Evidence** – capacity development does work!
- **Motivation** – it can be done ... with a little effort to start
- **Inspiration** – as to how this could be done for your member state/region

Present a number of Case Studies where Capacity Development activities have been provided between countries, across regions, and internationally

Note 1: for these studies: the Capacity, the forms, the providers and the levels of collaboration.
Note 2: not all are exclusively geodesy, most are a combination of capabilities that complement each other.

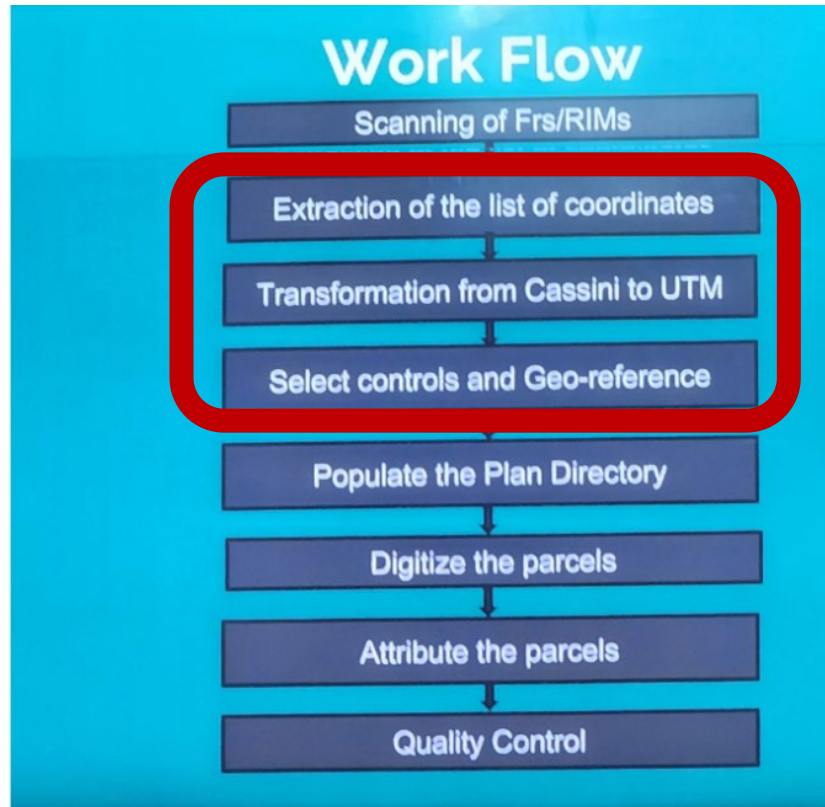


**STRONGER.
TOGETHER.**

CapDev – Kenya – Land Administration

The long road to digitization in Kenya | GIM International - January 2025*

By Dennis Mbugua Muthama, Catherine Gateri



A visualization of the spatial data digitization workflow (captured during the Ardhisasa stakeholder meeting and training presentation in July 2024).

Geodetic-related activities
required within this workflow....

Transformations and geo-
referencing



*<https://www.gim-international.com/content/article/the-long-road-to-digitization-in-kenya>

**STRONGER.
TOGETHER.**

Data Collection – Observations



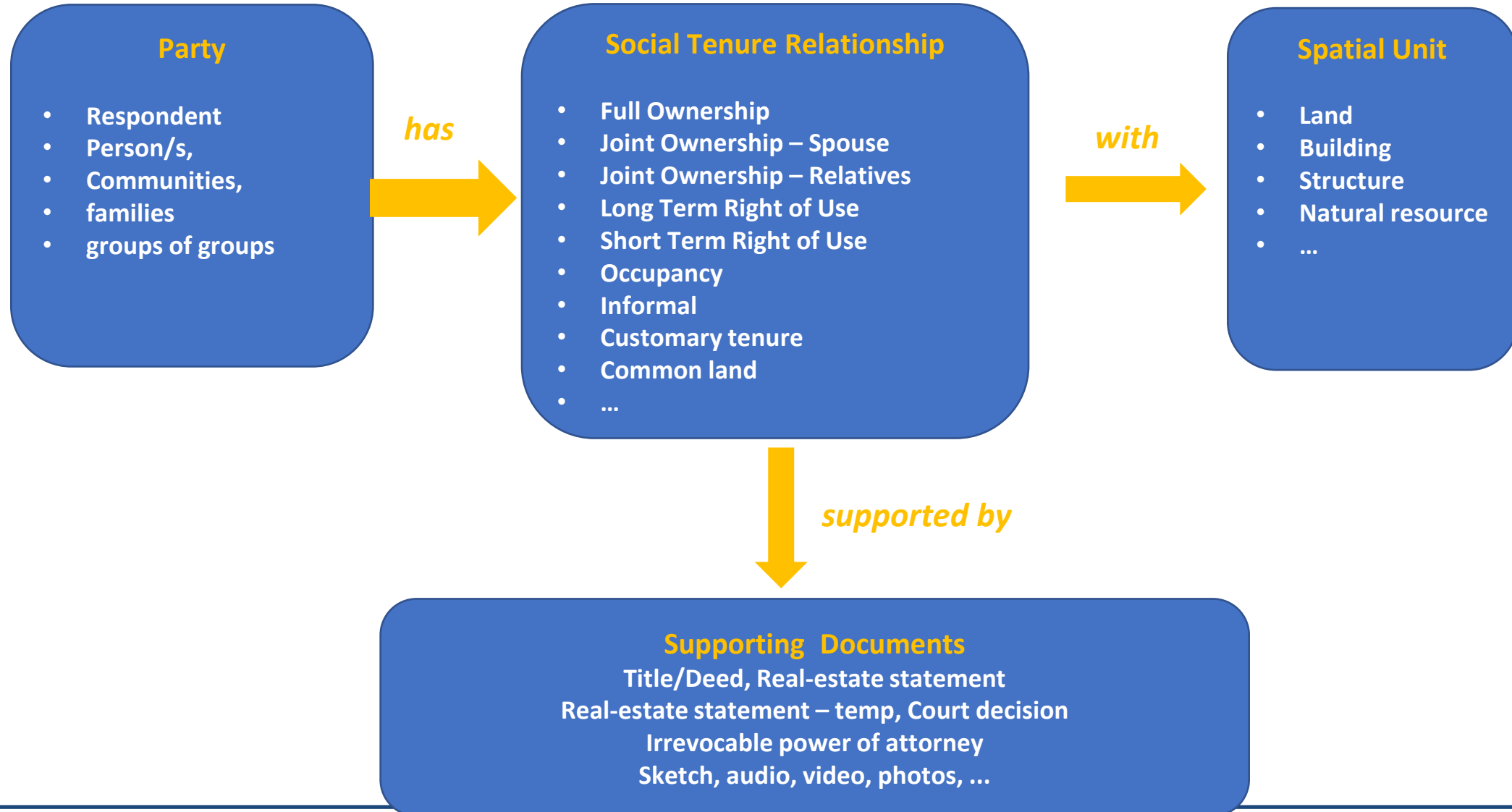
Data Collection – Observations

When we are discussing about accuracy and precision, let's not forget about the reality on the ground!

Besides accuracy and precision, the neighbors agreement is the key!

In the case of Chad, the role of the community/village leader!





CapDev – New Approaches in Land Admin

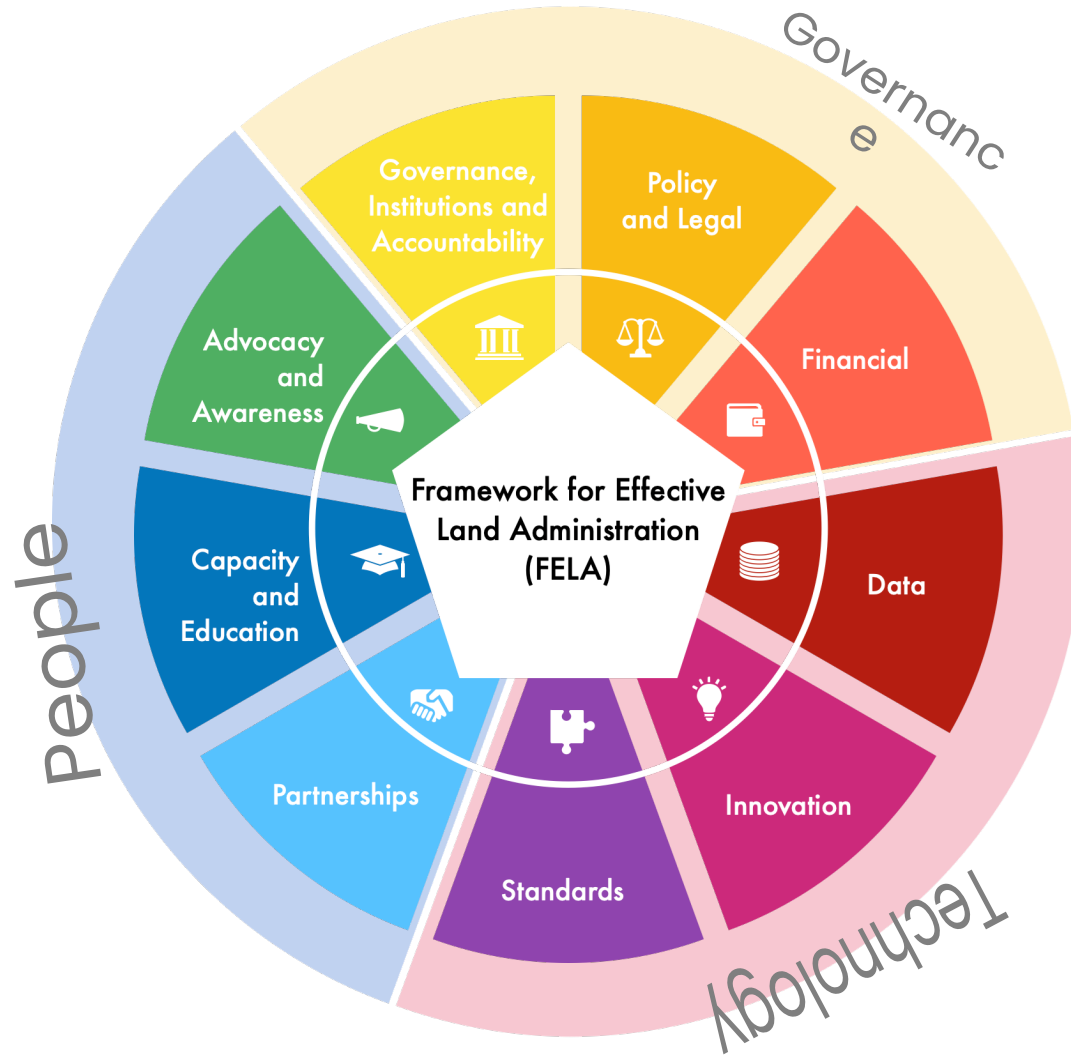
First of all, in LA the Global Land Tool Network (GLTN) is a **unique network that bring together NGOs, CSOs but also governments and industry.**

A lot of focus of GLTN is on **Capacity Development through in country work, publications, webinars and regional events/workshops** – a lot of the CD is also happening in cooperation with FIG and other Network partners.

That's also how STDN (Standard that is based on **ISO LADM**) was developed.

STDN is used in informal setting – and can bring benefits to communities in need – that can for example not be registered/mapped by the government (because it is informal).

FELA – the Framework for Effective Land Administration



- Adopted at 10th Session of UN-GGIM
- Global Framework for Land Administration

Application in Chad

- Used to raise awareness within leadership (link to SDGs and 2030 Agenda)
- Used to develop guidance (baseline assessment prior and impact assessment post field work)
- Supported assessment As Is Situation and the Wants to Be Situation

Pacific Geospatial and Surveying Council (PGSC) Partnership Desk

Mr Vaipo Mataora, Chair - PGSC

Ms Meizyanne Hicks, Vice Chair - PGSC

Supported by: SPC Partnership Desk

Email: pgsc_desk@spc.int

<http://pgsc.gem.spc.int/>



Pacific
Community
Communauté
du Pacifique



Mission

Pacific Island survey and geospatial services, including hazard mapping, urban planning, cadastre mapping, hydrography, and other geospatial requirements for sustainable development, are sufficiently resourced to respond to member country priorities.



PGSC Partnership Desk



1. Facilitating Collaboration and Partnerships; Global & Regional Collaboration, Technical Assistance, Capacity Building
2. Supporting Sustainable Development Goals (SDGs); Geospatial Data, Surveying Techniques and Tools
3. Promoting Data Sharing and Standards; Data Management, Standards and Protocols
4. Disaster Risk Management and Climate Change Adaptation
5. Building Geospatial Infrastructure
6. Advocacy and Awareness
7. Providing Technical and Financial Resources
8. Supporting Maritime and Oceanographic Surveys

Communications & Community



Pacific Geospatial and Surveying Council

Public group · 1.3K members

<https://www.facebook.com/groups/3998884766792177/>



Home > Updates from SPC > Web Stories

Mapping our Pacific Geospatial Future

Suva | 21 June 2022



Imagine a world without maps. It's hard to do. Humans are born map-makers, instinctively looking for landmarks, making sense of patterns, and forming connections when we venture beyond our known environment.

For this reason, geospatial science may be one of the most important fields of study you have ever heard of. Geospatial information is location information. At its simplest, this can be topographical information found on a map. But you can also add in layers of location-tagged data, to show changes or trends, for example, in land use, population density, vaccine distribution, or coral reef health over time.

"If you look at Fiji's national development plan, there are so many areas where geospatial information comes in. There are calls for geospatial information to be used in a variety of ways, from land use planning to disaster risk reduction."



Feature

modernization programs in CMA, there are also other institutions that will require assistance, such as:

- Revision of legislation of the National Lands Act, and relevant survey and mapping legislation
- Revision of the National Surveying and Mapping Act
- Revision of the National Surveying and Mapping Act
- Revision of the National Surveying and Mapping Act

Embracing challenges through Partnerships, Pacific Geospatial and Surveying Council (PGSC) and the Pacific Community (SPC) By: Andrea Lai, Senior Geomatics Engineer

In November 2014, a group of Pacific regional surveying and geospatial experts met in the margins of the annual Pacific Geospatial Information Systems and Remote Sensing (PGIS) User Conference in Suva, Fiji. It was at this meeting that the PGSC was first conceived and a charter governing its mission and objectives was developed. In addition, the Pacific Community (SPC) endorsed the Pacific Geospatial and Surveying Council (PGSC) as a regional institution, acknowledging its goals and objectives, and its role in supporting the Pacific region's geospatial information needs.

The PGSC is a regional institution, established to provide technical assistance and support to the Pacific region's geospatial information needs. The PGSC is a regional institution, established to provide technical assistance and support to the Pacific region's geospatial information needs.

Modern Geospatial Infrastructure - Key to Consistency and Efficiency

By: Joseph Kase, Senior Surveyor, Auckland, New Zealand

Fiji is highly vulnerable to natural disasters such as cyclones, coastal erosion, and flooding due to climate change and subsequent sea level rise. These natural disasters have led to the loss of lives and property, and the destruction of infrastructure. It is therefore critical for Fiji to enhance its natural disaster resilience, primarily because of its reliance on tourism and agriculture as its main sources of income. The key to enhancing natural disaster resilience is to have a modern geospatial infrastructure that can provide accurate and up-to-date information on the state of the land and its resources. This infrastructure should be able to provide information on the location and extent of natural disasters, as well as the impact of these disasters on the land and its resources. The PGSC is a regional institution, established to provide technical assistance and support to the Pacific region's geospatial information needs. The PGSC is a regional institution, established to provide technical assistance and support to the Pacific region's geospatial information needs.

Geospatial Surveying Stations

Geospatial Surveying Stations are part of the Pacific Geospatial and Surveying Council (PGSC) network. These stations are used for geospatial surveying and mapping. The PGSC is a regional institution, established to provide technical assistance and support to the Pacific region's geospatial information needs. The PGSC is a regional institution, established to provide technical assistance and support to the Pacific region's geospatial information needs.



PGSC Partnership - Activities



- UN-GGIM Integrated Geospatial Information Framework **IGIF Deep Dive Session**; November 2024
- UN-GGCE International Workshop on the Integration of Terrestrial, Maritime, Built, and Cadastral Domains: **“Joining Land and Sea”**; December 2024
- FIG Working Week (Brisbane) – **SIDS Session**; April 2025
- **GNSS Applications and Capacity** Workshop (COSPPac); May 2025
- IAG/GGOS Geohazards Focus Area, IUGG GeoRisk Commission, IUGG Joint Tsunami Commission, **GeTEWS Oceania Workshop**; November 2025

PGSC Partnership Desk - Capacity

- PGSC Coordinator – SPC Partnership Desk
- PGSC Communications – SPC Partnership Desk
- Regional Positioning – GNSS & Tide Gauge (equipment pool) for PICs

Structure of UN-GGIM: Americas

Leadership

- President: **Sofía Nilo Crisóstomo**
- Vice-President: **Leonardo Scharth Loureiro**
- Executive Secretary: **Pamela Castillo**
- Board Members (Vocales)
 - **Gabriela García Seco**, North America
 - **Isis Tejada**, Central América
 - **Simone Lloyd**, Caribbean
 - **Marcelo Emery**, South America

Working Groups and Networks

Working Groups

- Integration of Statistical and Geospatial Information
- Disasters
- **Geodesy (GRFA)**
- Integrated Geospatial Information Framework
- Land Administration (in process of implementation)

Networks

- ANA - **Rosario Casanova**
- Private Sector – **Valrie Grant**



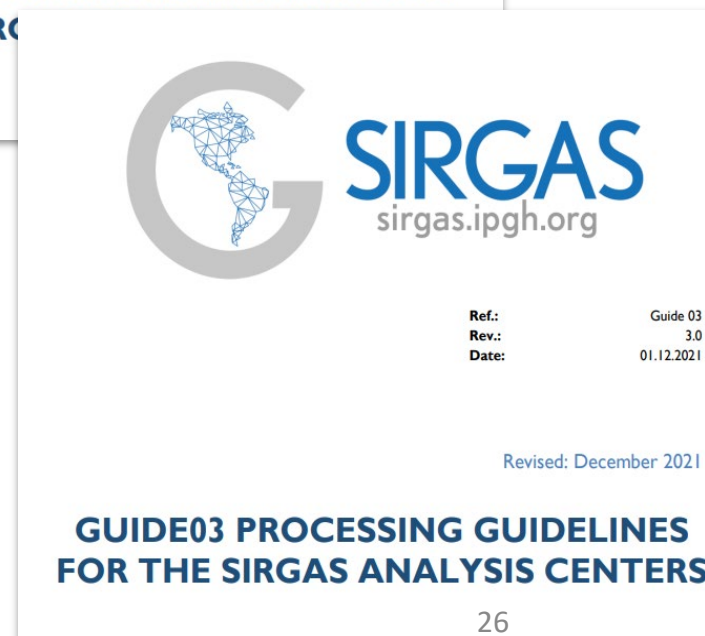
SIRGAS WG 2

Technical guidelines

- Guidelines for the Coordination of the SIRGAS Continuously Operating Network (SIRGAS-CON)
- Guidelines for the installation, operation and registration of SIRGAS-CON stations
- Guidelines for SIRGAS Analysis Centers
- Guidelines for IHRF station selection
- Guidelines for performing gravimetric measurements around IHRF stations

Recommendations

- IGS site guidelines
- Monumentation of permanent GNSS stations ? UNAVCO
- Physical Site Specifications: Geodetic Site Monumentation (W.L. Combrinck and M. Schmidt)
- NOAA/NGS Guidelines for establishing and operating CORS





UN-GGIM:Americas
REGIONAL COMMITTEE OF UNITED NATIONS
ON GLOBAL GEOSPATIAL INFORMATION
MANAGEMENT FOR THE AMERICAS

SIRGAS WG 3 - Training activities

2022 - Workshop "Vertical Reference Systems" – Santiago, Chile

November 2 to 4. 14 assistants from 6 countries.

2023 - 14th International School on "The Determination and Use of the Geoid" – Buenos Aires, Argentina

November 13 to 17. The school was held in cooperation with the International Service for the Geoid from the International Association of Geodesy. 40 assistants from 14 countries.

2024 - SIRGAS Symposium

November TBD. To train scientists, professionals and technicians from national mapping agencies, universities and research centers in the most modern geodetic techniques linked to the geocentric, altimetric and gravimetric reference frameworks.



Collaboration working groups

- Aguascalientes Declaration
- Capacity Development WG

Education/webinars

- As part of the activities of UN-GGIM: Americas
- Diffusion of other educational activities from partners

Geo-Ethics

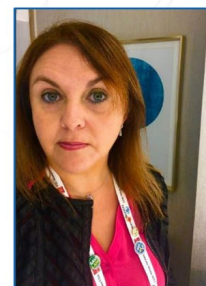
- Include SDG in Academic Curriculum
- Ethical use of Geospatial Data

Inventory of courses related to Geospatial Data

ACADEMIC NETWORK

UN-GGIM: AMERICAS

ANA Executive Committee 2023 - 2027



ROSARIO CASANOVA
CHAIR



MACARENA PÉREZ
VICE CHAIR



RIGOBERTO MORENO
SECRETARY



Advisory Board 2023 - 2027



CHARLOTTE D. SMITH



DANA J. CACCAMISE



MIRIAM OLIVARES



AND
New representatives for each working group of UN-GGIM:
Americas

Translation documents IGIF

The overall ambition of the Translation Team (TT) is:

- to help promote the UN-IGIF documents widely in support of improved geospatial information management for sustainable development.
- to help foster the launch of as many language tracks as possible.

FRENCH TEAM

BELGIUM – Sandrine D'Hoedt

CANADA – Eric Loubier



Sandrine D'Hoedt



Eric Loubier

ARABIC TEAM

KINGDOM OF MOROCCO – Nabila Licer

KINGDOM OF SAUDI ARABIA – Mohammad Abdoh AlMabrook

UNITED ARAB EMIRATES – Mohamed Gheta



Nabila Licer



Mohammad AlMabrook

PORTUGUESE TEAM

BRAZIL – Rafael Lopes da Silva

MOZAMBIQUE – Odete Semiao



Rafael Lopes da Silva



TRANSLATION TEAM



Mikael Lilje



Sergio Cimbaro



Paul L. Riley



Rosario Casanova

SPANISH TEAM

ARGENTINA – Sergio Cimbaro

MEXICO – Gabriela García Secco



Sergio Cimbaro



Gabriela García Secco

SERBIAN TEAM

SERBIA – Ljiljana Živković



Ljiljana Živković

RUSSIAN TEAM

RUSSIA – Alexey Trifonov



GERMAN TEAM

GERMANY – Gwendolin Seidner



Gwendolin Seidner



UN-GGIM:Americas
REGIONAL COMMITTEE OF UNITED NATIONS
ON GLOBAL GEOSPATIAL INFORMATION
MANAGEMENT FOR THE AMERICAS



NETWORKS

- o Standards Network
- o Regional Capacity Network
 - o Americas
 - o Africa ARN (African Regional Network)
 - o Asia/Pacific AP-CDN (Capability Development Network)
- o Young Surveyors Network (YSN)

HOW

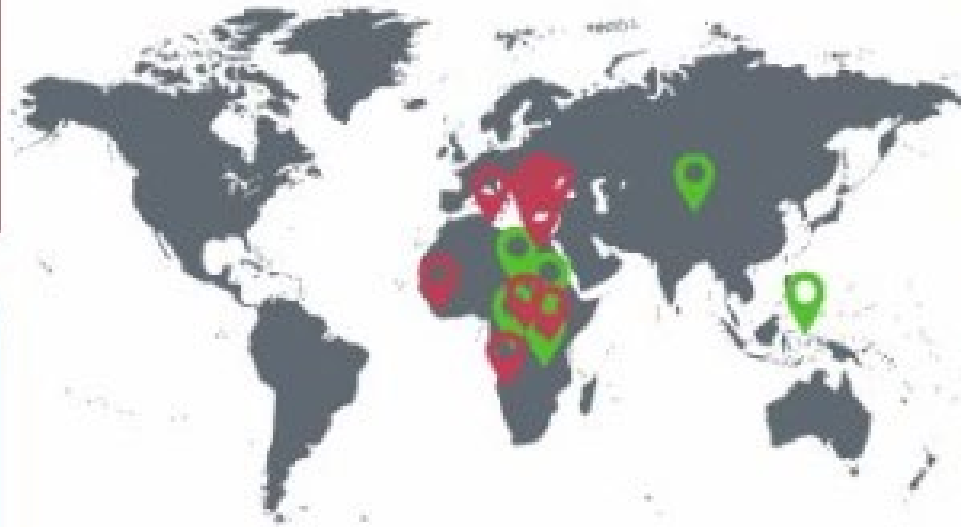
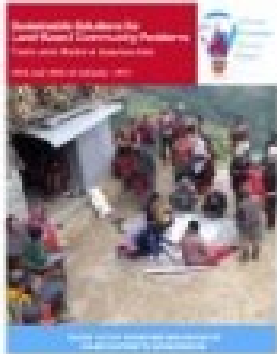
FIG YOUNG SURVEYORS NETWORK

- To **improve** the number of young professionals participating within FIG.
- To **help** young professionals in the beginning of their careers with contacts.
- To **increase** co-operation between the commissions and the students and young professionals network.



HOW

Volunteer Community Surveyor Programme



VCSP Wisdom Workshop

3 separate workshops and MOOCs with over 250 participants from over 40 countries globally

in-Country Deployments

2015 - 2021 (green)	2022-2023 (red)
6 Countries	9 Countries
2 Opportunity Partners	2 Opportunity Partners
7 GLTN Partners	8 GLTN Partners
20 VCSs	15 more VCSs
7 VCS Mentors	15 VCS Mentors

Knowledge Portal

Comprehensive and ambitious structure
Technical development well underway
On track for 2024 delivery

VCSP e-Volunteering

3 Mapathons
2 Countries, 1 global
140+ Mappers (45+ countries)
3 Opportunity Partners
37,000+ Features Mapped

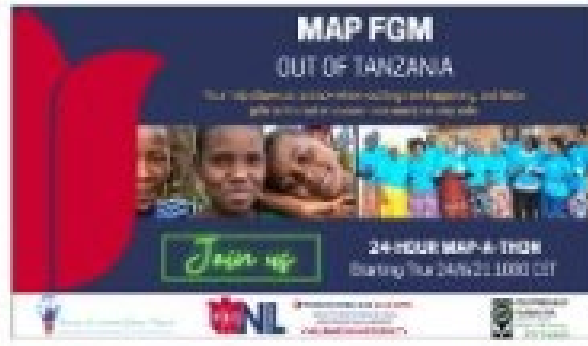


FIG Asia Pacific CDN - Delivery of Capacity Development

- **Promote and create an awareness of the geodetic / geospatial profession** through an effective technology-based marketing campaign
- **Evaluate the geodetic / geospatial capability** – status, determine immediate needs, future core capabilities, educational and training requirements, institutional curriculum, mutual recognition of qualifications
- Developed mechanisms to **access and exchange information and experience** w.r.t geodetic / geospatial technical developments, data management, operations, applications
- Create **opportunities for professional development, mentoring, sponsorship**
- Provision of “advice” through **workshops, forums, meetings, seminars**
- Collaborate to **form alliances with “like minded agencies”**, and
 - Professional / Scientific organisations - ASEAN Flag, PGSC, FIG, IAG, LINZ, Geoscience Australia, NGS, SSSI, SSNZ, RICS
 - Academic / Educational institutions (see slide 10) - USP, University of Fiji, UNSW, RMIT, University Otago
 - International agencies - UN

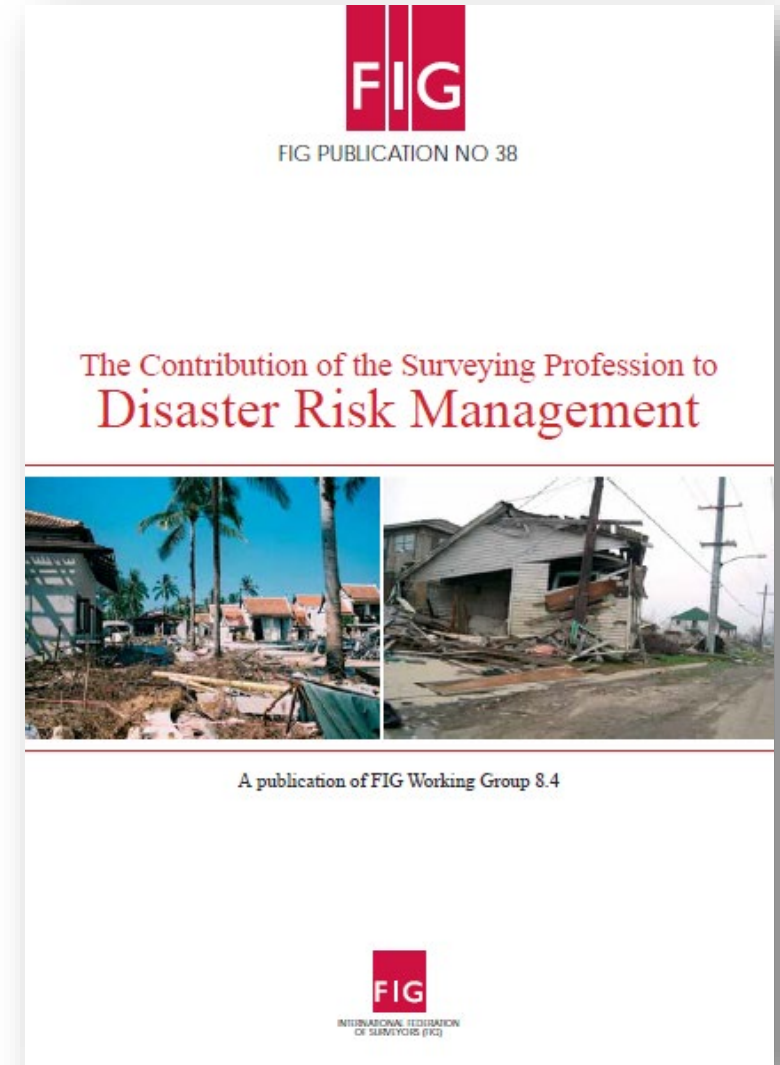


Capabilities of Surveyors

Surveyors' capabilities make an important contribution to improve the outcomes of the disaster risk reduction and resilience

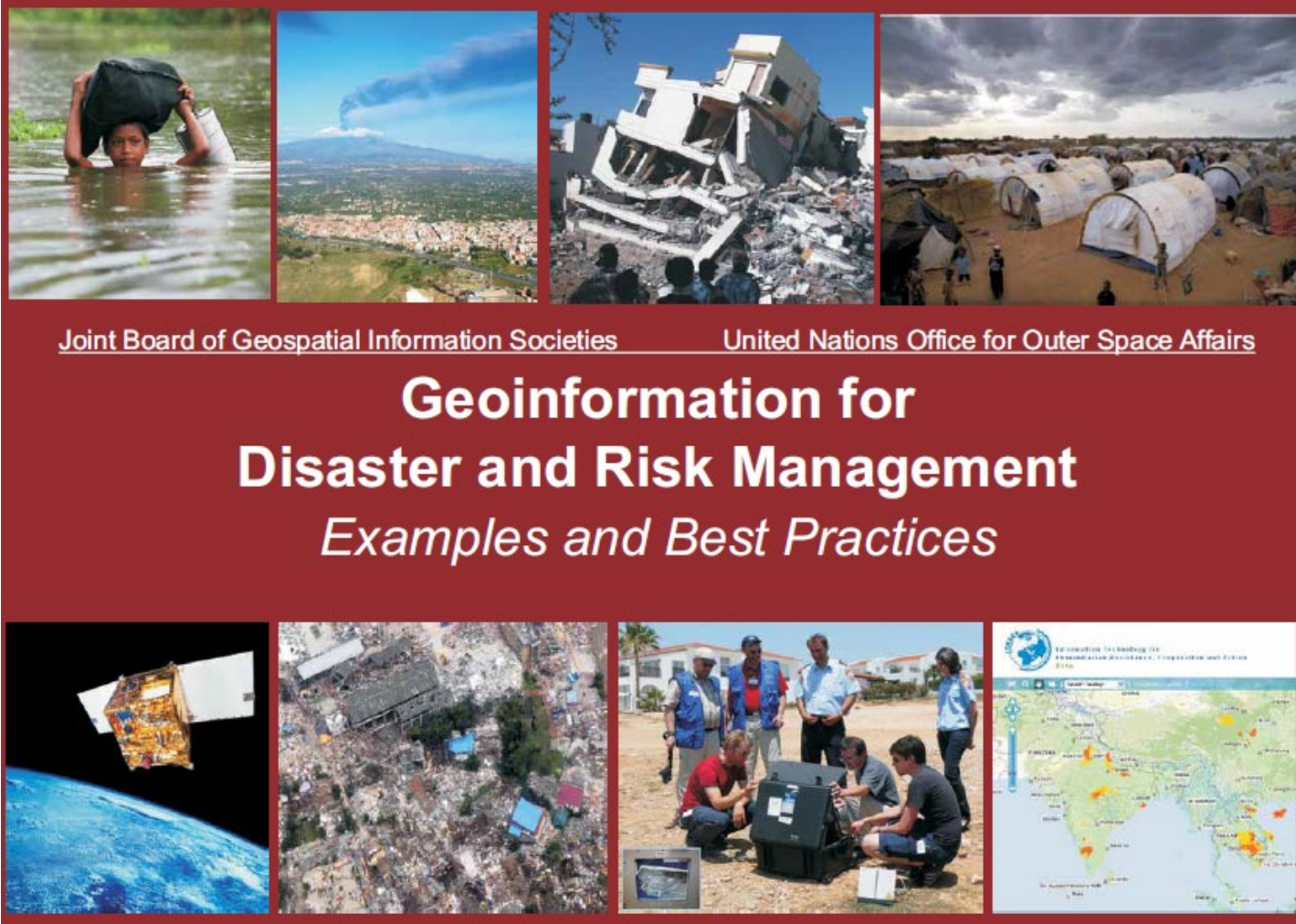
Through the supply of geospatial / geodetic information from a combination methods and measures

- **before** (risk analysis, prevention, preparedness),
- **during** (emergency planning) and
- **after** a disaster (reconstruction).

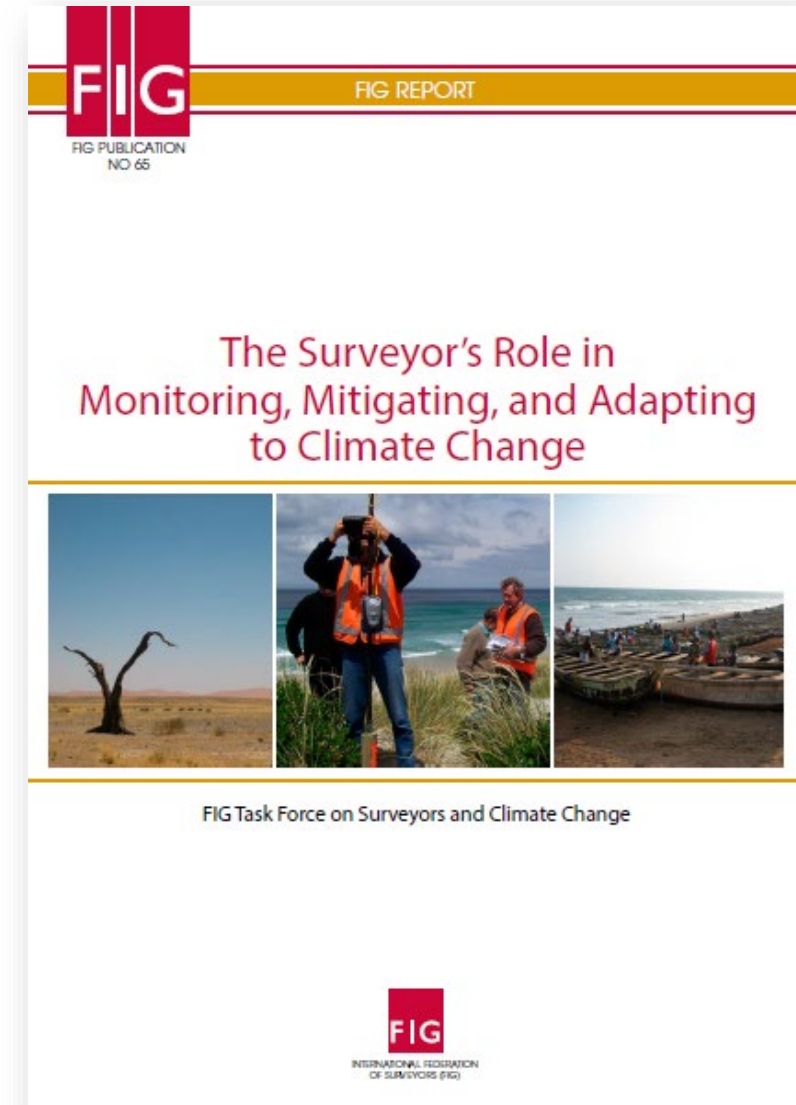


<https://www.fig.net/resources/publications/figpub/pub38/figpub38.asp>

Capabilities of Surveyors - Publications



https://www.fig.net/resources/publications/Geospatial_societies/Geoinformation_for_Dasaster_and_Risk_Management.pdf



<https://www.fig.net/resources/publications/figpub/pub65/figpub65.asp>

Concise Guide



SENDAI FRAMEWORK
FOR DISASTER RISK REDUCTION 2015-2030

UNDRR
UN Office for Disaster Risk Reduction

Strategic Approach to Capacity Development for Implementation of the Sendai Framework for Disaster Risk Reduction

CD for DRR Obstacles and Challenges

1. Insufficient understanding/appreciation of DRR-specific CD needs
2. Over-reliance on training and education
3. A lack of access to or existence of facilities, programmes, or resources to support awareness
4. Failing to provide support for or access to CD for DRR
5. Insufficient availability of resources
6. Little or no local ownership of CD programmes and projects
7. Insufficient focus on sub-national capacity
8. Lack of standardized CD for DRR evaluation indicators
9. Lack of general awareness and knowledge of risk drivers and the stakeholders' DRR roles (including at the local level)
10. A lack of understanding of existing legal instruments
11. A focus on non-conflict areas

Strategic Collaboration is the Key !



Co-operate and Communicate with organisations who represent a diverse group of members
Work **collaboratively** to build the **capabilities** of geodetic and geospatial professional to
meet the **challenges of the future**

Being able to communicate your needs, your skills and the benefits that geodesy can provide, is critical BEFORE asking for CD Support

- **Human** - technical training and review on CORS network design
- **Fiscal** - funds (how much, by when) needed to upgrade CORS to multi-constellation
- **Equipment** - IT infrastructure and data storage required to support new CORS
- **Expertise** - in field installation of CORS and IT; configuration
- **Data** - new archiving and QC; data sharing with IGS / regional partners; data analysis, determining geodetic products; scientific and societal applications
- **Planning** - consider the Joint Global Geodesy Development Plan

Capacity Development Requests - terms to include

- Request | Purpose | Partners | Benefits | Quantity | Why | Cost

If you require support to summarise your needs, the GGCE is here to help



**STRONGER.
TOGETHER.**

Partners with Capacity Building experience

International bodies



UN-GGIM
UNITED NATIONS INITIATIVE ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT



UN HABITAT
FOR A BETTER URBAN FUTURE

Organisations



Other International Organisations



Summary - Capacity Development (CD)

“Building capabilities (skills) will develop capacity”

- Groups are out there in countries, regions and internationally
- Collaboration is the main catalyst in Capacity Development

Main Takeaways

- Assistance is always available - just ask around
- Asking for it is not a weakness
- Be clear and objective about what you are asking for
- Communicating a clear request for CD is important
- Communicating the clear offer of CD is important
- Reach out, participate, collaborate
- Craft a pragmatic Business Case for investment (*tomorrow*)



**Communications and Marketing is critical to crafting a
successful ‘request/offer’ of assistance**

**STRONGER.
TOGETHER.**