

## **2030 Agenda - in the minds of all FIG Commissions, Members & Delegates (12656)**

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### **SUMMARY**

The theme for the FIG 2023-2026 term, "Serving society for the benefit of people and planet; tackling the global challenges," emphasizes FIG's commitment to advancing the 2030 Agenda and the Sustainable Development Goals (SDGs). The Task Force on FIG and the SDGs aims to integrate these goals into FIG's initiatives by 2026, fostering awareness and action within the FIG community. Surveying professionals play a crucial role in achieving various SDGs, such as promoting gender equality in land rights, ensuring sustainable urbanization, combating climate change, and fostering global partnerships. FIG's commitment to integrating the SDGs reflects a broader dedication to global sustainability and inclusivity, with surveyors positioned as key actors in shaping a more equitable future. Through education, collaboration, and innovation, the surveying community contributes to tackling pressing global challenges, advancing the 2030 Agenda, and serving society for the benefit of people and the planet.

This paper showcases several practical applications and case studies to demonstrate how various FIG Commissions are actively serving society for the benefit of both people and the planet.

With this paper we encourage the FIG community to take ownership to contribute to the 2030 Agenda.

*NOTE: Elements of this paper have been published in GIM Magazine 2, 2024*

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### **1. Serving society for the benefit of people and planet: How surveying professionals are contributing to the achievement of the SDGs**

Informed and inspired by the International Federation of Surveyors (FIG), members of the global surveying community are contributing to the achievement of the Sustainable Development Goals (SDGs). This paper showcases several practical applications and case studies to demonstrate how various FIG Commissions are actively serving society for the benefit of both people and the planet.

The 2030 Agenda for Sustainable Development, a comprehensive plan of action for people, planet, prosperity, peace and partnership, serves as a blueprint for a sustainable world (UN General Assembly, 2015). Fundamentally, the 17 Sustainable Development Goals (SDGs) and 169 targets guide the agenda, with urgency emphasized due to pressing issues such as pressure on land and sea, threats of calamities, extreme poverty, inequality, mistreatment of women, warfare, terrorism and the ongoing refugee crisis.

Recognizing the crucial role of professionals in the land and built environment in achieving the 2030 Agenda, the FIG General Assembly established the Joint FIG and the Sustainable Development Goals Task Force (FIG SDGs TF) during the FIG Working Week in Hanoi in 2019.

The task force's primary objective is to integrate the SDGs into FIG and its member associations by 2026 by actively raising awareness. The task force aims to inform and inspire the FIG community to diligently contribute to measuring the targets and indicators outlined in the SDGs, viewing this commitment as a way of serving society for the benefit of both people and the planet.

As shown in Table 1, FIG members can be instrumental to the SDGs in two main ways: firstly by creating awareness and contributing to achieving the SDGs and the specific targets, and secondly by collecting relevant data to contribute to the assessment of the targets by using the indicators. Several practical applications and case studies are showcased below to demonstrate this in more detail.

	Com. 1	Com. 2	Com. 3	Com. 4	Com. 5	Com. 6	Com. 7	Com. 8	Com. 9	Com. 10	YSN	ARN	AP RN	Stand-ards
<b>1</b> NO POVERTY							1	1	1		1	1		1
<b>2</b> ZERO HUNGER							1	1	1		1			1
<b>3</b> GOOD HEALTH AND WELL-BEING			1											1
<b>4</b> QUALITY EDUCATION		1									1	1		1
<b>5</b> GENDER EQUALITY	1		1				1				1			1
<b>6</b> CLEAN WATER AND SANITATION				1	1	1		1			1			1
<b>7</b> AFFORDABLE AND CLEAN ENERGY				1	1	1					1			1
<b>8</b> DECENT WORK AND ECONOMIC GROWTH												1		1
<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE			1		1	1			1	1				1
<b>10</b> REDUCED INEQUALITIES	1		1				1					1		1
<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES			1	1	1	1	1	1	1	1	1	1		1
<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION														1
<b>13</b> CLIMATE ACTION			1	1	1	1			1					1
<b>14</b> LIFE BELOW WATER			1	1	1							1		1
<b>15</b> LIFE ON LAND			1		1		1	1						1
<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS	1						1					1		1
<b>17</b> PARTNERSHIPS FOR THE GOALS									1					1


1 In cases where the FIG Commission can play a role in creating awareness and contribute to achieving the SDG's, this icon is present.  
 In cases where the FIG Commission can play a role in measuring the Indicator, this icon is present.

Table 1: The contribution of FIG Commissions to achieving the SDGs.

## 2. Achieving gender equality and empowering all women and girls

Despite women being responsible for 60–80% of food production, their representation among landholders is less than 15% (FAO, 2018). Additionally women face various obstacles in accessing land and securing tenure. Ensuring women’s rights to land is key to advancing their economic independence and greater negotiating and decision-making power. Economically empowered women become less vulnerable to domestic violence and discriminatory practices against them, including as they grow older or become widowed or divorced. Furthermore, they tend to invest in the development of human capital, well-being and the livelihood of the entire family. Additionally, secure access to land, information and technology ensures that women are better positioned to preserve natural resources, adapt to and recover from climate change, and aid reversing, halting and minimizing soil degradation.

Securing and protecting land rights for all are reflected in six of the targets but contribute to achieving 13 goals, 59 targets and 65 indicators of Agenda 2030 (ILC, 2018; UN Women, 2018).

The right for women to own, control and inherit land and other forms of property, as stated in SDG 5, is one of the targets for achieving gender equality. This is emphasized in Target 5a which seeks to undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, following national laws.

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*Figure 1: Women receiving land titles in Uganda and Mozambique after periodic facilitation about land matters.*

Promoting women’s access to land and land tenure security has been on the FIG’s agenda for several years. FIG members have long been involved, together with its partnering organizations, in developing and implementing various instruments, such as the Fit for Purpose Land Administration (FFPLA) approach, the ISO 19152:2012 Land Administration Domain Model (LADM), the Social Tenure Domain Model (STDM), and the FIG Guidelines for Women’s Land Rights. These instruments help to capacitate, inspire and support the community of land professionals in their efforts to design and implement equitable and inclusive land policies, strategies and processes.

Additionally, land professionals are crucial in building gender-sensitive land cadastres with gender-segregated data that support not only the monitoring of the SDGs but also decision-making. In many African countries, including Uganda, Botswana, Zambia, Benin, Chad, Rwanda, Mozambique and Ethiopia, surveyors have participated in programmes securing the land rights of both rural and urban women (see Figure 1).

### **3. Make cities and human settlements inclusive, safe, resilient and sustainable**

There is a continuing lack of protection and recognition of tenure rights for informal urban settlements (slums) in developing countries and the pertained rural conditions that drive mass, unplanned urban migration.

Target 3 of SDG 11 (Sustainable Cities and Communities) states: “By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.”

A strong case can be made for the role of surveyors with regards to SDG 11 and also SDG 9 (Innovation). Their contribution relates to the use of mobile mapping and community-generated information to support land administration, the application of machine learning techniques and cloud computing to the collected data, and the creation of digital twins, i.e.

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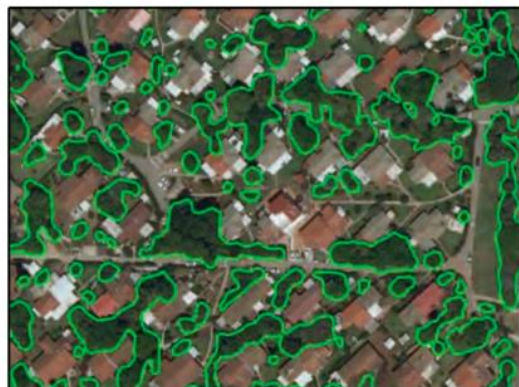
real-time replicas of the environment. Another example is the establishment of national infrastructure databases that promote smart and efficient exchange of data, policymaking and planning, thus significantly minimizing negative impacts on the environment and society as a whole.

#### 4. Action to combat climate change and its impacts

Land management and planning are key elements to achieve the goal of combating climate change and its related impacts (SDG 13). Geospatial data plays a crucial role in providing insights, and facilitating informed decision-making processes and the establishment of long-term strategies. Land and geospatial professionals are integral to:

- Detailed orthophotos and digital surface models (Figure 2): These are indispensable in the creation of national tree canopy databases that can be used by national and local authorities to efficiently allocate resources and facilitate the adoption of effective tree planting policies, e.g. in cities to combat the phenomenon of urban heat islands.
- Sea level rise analysis: Visualization of sea level rise scenarios on a map-centric platform makes it possible to identify potential hazards and supports informed planning. Furthermore, the utilization of 3D models provides tools for deeper analysis and insights.
- Blue Surveying Initiative: Accurate hydrographic data is an indispensable tool for advancing targets related to marine biodiversity conservation, sustainable fisheries and the reduction of marine pollution (as outlined in SDG 14).

In addition, as sea levels rise and weather patterns shift, the information provided by hydrographic surveys enables effective planning and adaptation to climate change impacts, aligning with SDG 13 on climate action.



*Figure 2: Tree canopy cover map. (Image courtesy: Survey of Israel)*

#### 5. Strengthen sustainable development in partnership

SDG 17 recognizes that collaboration is paramount, since no entity can single-handedly accomplish the goals. Target 16 states: “Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share

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knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries.” In other words, stakeholders need to unite, leveraging shared and complementary knowledge to effectively contribute to the realization of the SDGs.

As a member organization, FIG provides a platform for members and stakeholders to inform, discuss, exchange and act towards a more sustainable world.

In pursuit of these goals, the indispensable role of surveyors becomes evident through numerous practical implementations and use cases. Notably, the potency of data visualization, exemplified by maps, emerges as a key catalyst. As the saying goes, “a picture is worth a thousand words, and a map is worth a thousand pictures”. By translating relevant data into visual maps, as opposed to conventional alphanumeric formats, surveying professionals enhance stakeholders’ ability to gain insights and derive informed conclusions.

## 6. Education of surveying professionals

SDG 4 focuses on education. In order to actively engage in and contribute to the achievement of the SDGs, surveying professionals must possess knowledge, awareness and understanding of the goals, including their significance and the roles each person can play. Learning about the goals and targets of sustainable development not only enables surveyors to visualize the impact of their professional activities, but also to make decisions aligned with these objectives.

FIG Commission 2 – Professional Education is in the process of conducting research into worldwide curricula for surveyors. One of its questions is related to the inclusion of the SDGs in each curriculum. From the preliminary results, it can be stated that this subject is poorly included – if at all – in the current education and training offering.

In some instances, however, such as in the case of Uruguay (Figure 3), SDG-related research modules have been integrated into university curricula for surveyors. In Uruguay, these courses introduce students to the SDGs from a geographical perspective, requiring them to examine international methodologies for assessing the sustainable goals indicators, critically review the national measurement methodologies, and develop systematic processes appropriate to their national reality.

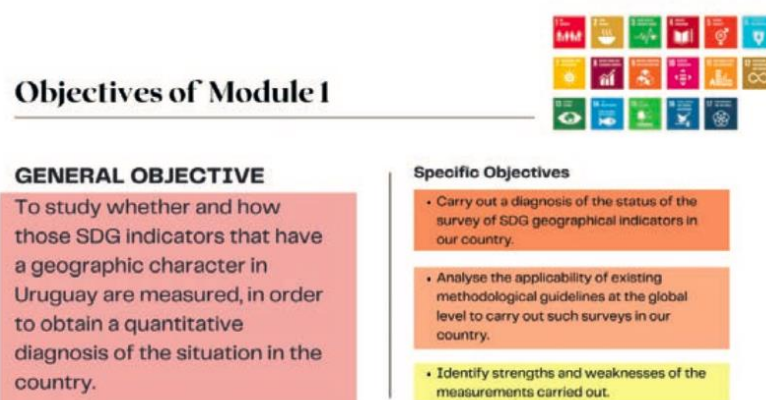


Figure 3: Description of education goals in Uruguay.

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## 7. Young surveyors pave the way for sus-tainable development

As the torchbearers of change, young surveyors hold considerable sway in shaping the landscape of global development. The synergy between young surveyors, corporate entities, non-profits and multilateral organizations has created a holistic approach to problem-solving. This spirit of collaboration extends to programmes like the FIG Mentoring initiative, which focuses on soft skills development. Piloted in Africa and inspired by the Geospatial Council of Australia's mentoring programme, this initiative carries substantial weight in shaping the next generation of surveying professionals. The FIG Mentoring programme not only imparts essential soft skills but also serves as a bridge across generational gaps. By fostering mentorship relationships, it ensures the transfer of knowledge and expertise from seasoned professionals to the emerging talent pool. This approach is fundamental in building an all-inclusive, diverse and equal community within the surveying profession. This comprehensive strategy ensures that the profession continues to evolve with a commitment to sustainability and societal well-being.

Supported by this, young surveyors are also emerging as pivotal factors in pursuit of the global SDGs, driving positive change through innovative approaches and collaborative initiatives. One noteworthy example is the FIG Young Surveyors Network's Volunteer Community Surveyor Program (VCSP), which has an enormous impact on mapping land rights in marginalized communities across sub-Saharan Africa, Asia and the Pacific (Figure 4). This programme exemplifies the significant contribution of young surveyors to addressing pressing societal issues by leveraging technological prowess. Partnerships for prosperity have been a hallmark of these initiatives, fostering collaboration between diverse stakeholders. Through such initiatives, young surveyors are actively shaping a more sustainable and equitable future.



*Figure 4: The VCSP SmartLand Maps team in Sierra Leone.*

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## **8. Achievements of the FIG Task Force on SDGs in 2023**

The main objective of the Task Force is to ensure that ‘in 2026 the understanding of the 2030 Agenda and the relevance of the SDGs for our profession are embedded within FIG’. The target groups of the Task Force are the FIG delegates, Member Associations, delegates & partners of FIG and the formal FIG representatives (President, council, commission and network chairs).

To achieve the overall objective, the following specific objectives are determined:

- Increasing understanding of the 2030 Agenda
- Raising awareness of the importance on the 2030 Agenda and SDGs for FIG
- Informing & Inspiring the FIG Community
- Assessment of needs & measuring the progress

Activities in 2023 included delivering slide-decks for the FIG Working Week, supporting commissions and networks to raise awareness, appointing SDG ambassadors, and hosting dedicated sessions at FIG events. A LinkedIn page was launched to inform and inspire the FIG community, achieving 255 members within six months.

Achieved results include commission work plans with SDG attention, raised awareness during FIG events, and inclusion of SDGs in the 2024 FIG Working Week. Pending tasks include updating web pages, incorporating SDGs into newsletters, and assessing progress using defined indicators.

Overall, the Task Force made significant strides in integrating the 2030 Agenda and SDGs into FIG's initiatives, though some planned activities are pending due to resource constraints.

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## Conclusion

FIG is at the forefront of translating the 2030 Agenda for Sustainable Development into actionable initiatives. The establishment of the Task Force on FIG and the Sustainable Development Goals underscores FIG's commitment to integrating these goals by 2026 into all commissions' working plans, addressing urgent global challenges across land and sea pressures, calamities, poverty, inequality and environmental concerns. Surveyors play a crucial role in this agenda, contributing to gender equality, sustainable urbanization, climate action and fostering global partnerships. Education emerges as a cornerstone of surveyors' effective involvement in the SDGs, emphasizing the need for awareness and understanding of these goals. Efforts to incorporate SDGs into curricula, as seen in the case of Uruguay, highlight the importance of preparing future professionals to align their decisions with sustainable development objectives. Additionally, the proactive engagement of young surveyors, as demonstrated through initiatives like the FIG Young Surveyors Network's Volunteer Community Surveyor Program, showcases the transformative potential of emerging professionals in mapping land rights and driving positive change. The collaborative, intergenerational approach within the surveying community ensures a holistic contribution to global sustainable development, shaping a more equitable and inclusive future. It is the decade of action, with surveyors at the forefront.



*Members of the Task Force on FIG and the Sustainable Development Goals present during the FIG Working Week 2024: Søren Brandt Pedersen, Rosario Casanova, Paula Dijkstra, Ronald Ssendendo, Shirley Tendai Chapunza and Ganesh Prasad Bhatta.*

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## BIOGRAPHICAL NOTES

Paula Dijkstra is the chair of the Task Force on FIG and the Sustainable Development Goals. As director of Kadaster International in the Netherlands, she is responsible for the coordination of the organization's international activities and cooperation projects. She was also the co-conference director of FIG's first e-Working Week in 2021.

Lydia Najjuma is a quantity surveyor at Sigma Immobili Ltd in Uganda. Passionate about achieving inclusive growth and sustainable development through standards, she actively serves on several professional bodies including the Task Force on FIG and the Sustainable Development Goals, Africa Association of Quantity Surveyors (AAQS) Education Research and Training Board, and the International Cost Management Standards (ICMS) Standard Setting Committee.

Ronald Ssengendo is the Vice Chair of the Taskforce on FIG and the Sustainable Development Goals. He is also the Chairperson of Uganda's Surveyors Registration Board, the body responsible for regulating and controlling the surveying profession in Uganda. He is a Lecturer at the Department of Geomatics & Land Management Makerere University Uganda with a BSc, an MSc and a PhD in Geodesy and Geoinformatics.

Marisa Balas is a PhD candidate in the field of Social Sustainability and Development at Universidade Aberta in Lisbon. For the past 15 years, she has been engaged in land reforms, revision of land administration processes, and implementation of land information systems. She is an active member of FIG, including as chair of the Commission 7 Working Group on Women's Land Rights, and member of the Task Force on FIG and the Sustainable Development Goals.

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Rosario Casanova Rosario Casanova is a professional land surveyor from in Uruguay, she has a master's degree in Urban planning and Land Development and a Doctorate degree in Land Surveying. She has been professor at the Land Surveying Institute in Uruguay for almost 30 years and the Director of that Institute for 6 years. She is the chair of the Academic Network of UN-GGIM: Americas, she is the vice-chair of Commission 2: Professional education of International Federation of Surveyors (FIG) and the vice-chair of the FIG Capacity Development Network of the Americas.

Anna Shnaidman is the Chief Scientist at the Survey of Israel. She received her BSc (Cum Laude) and MSc and PhD (Ph.D. thesis presented a new unconventional approach that employs Biological Optimization to attain uniform and accurate coordinates under customary cadastral requirements - Genetic Algorithms) degrees in Mapping and Geo-Information Engineering from Israeli Institute of Technology - Technion. Shnaidman is a Licensed Surveyor and a Lecturer as well. For the period of 2018-2020 she worked as a postdoctoral researcher and a Lecturer at the GIS Technology Section, Faculty of Architecture and the Built Environment, Delft University of Technology, the Netherlands – main research objective was the revision of Land Administration Domain Model (LADM - ISO 19152).

Søren Brandt Pedersen has a M.Sc. in surveying, planning and land management. He is senior advisor in the surveying company LE34 in Denmark and has almost 30 years experience in surveying, mapping and land governance. He has specialized in expropriation, citizen involvement and landowner management in connection with infrastructure projects.

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