



GROUNDING SUSTAINABILITY

LAND, SOILS AND THE SUSTAINABLE DEVELOPMENT GOALS

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Grounding Sustainability:

land, soils and the Sustainable Development Goals

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Key Messages

Responsibility for achieving the SDGs lies primarily with national governments, through their policies, development plans and financial tools. Good land governance, participatory land use planning, sustainable use of land and soils and meaningful involvement of communities are critical for achieving the SDGs. This presents both challenges and opportunities.

Multiple gains: The SDGs offer governments a strong, integrated framework for progressive reforms to land and soil management that can achieve multiple policy objectives, including mitigating the effects of climate change.

Competing claims: Pressures on land for food, fodder, fibre, timber, renewable energy, buildings and infrastructure, caused by both domestic demographic and consumptive change and international trade and investments, mean that policies prioritising certain SDGs will create “winners” and “losers”. Governments face the crucial task of managing these trade-offs in a way that will advance sustainable use of land and soil, and “Leave No One Behind”.

Governance: In some countries the land sector is characterised by weak governance, political patronage, corruption, impunity for powerful elites, ineffective judicial systems and weak enforcement of existing laws and international policies, like ILO convention 169 for indigenous and tribal people, the UN Guiding Principles on Business and Human Rights (UNGPs), the UN Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGTs). Trade partner countries and donors have often shied away from engaging in land rights issues while they too have responsibilities to act as agreed in OECD guidelines for multinational enterprises, the UNGPs, the VGGTs. Addressing these governance issues by governments, trade partner countries and donors will be crucial for achieving the many SDG targets with strong land components.

Monitoring progress: all SDG targets have indicators to track their progress, both domestically and internationally. However, some indicators still lack defined methodologies and/or readily available data, e.g. regarding gender and tenure security. New geospatial technologies and participatory data collection and sharing provide possibilities to fill these gaps.

Stakeholder participation: the greatest impetus for improving land governance and achieving sustainable management of land and soils is the engagement with and participation of multiple stakeholders with a shared commitment. It requires broad alliances to break down the obstacles to sustainable land governance and use, halt unsustainable land use and communicate the importance of land related policies and actions, while agreeing on a clear set of rules and goals.

1. Introduction: the international debate on sustainable land management

In the last decades, the issue of soil and land has been raised on the agenda, both locally and internationally. In the discussions of four Global Soil Weeks about land and soils, land tenure played an increasingly important role in bringing soil health¹ to the forefront. Land governance is being discussed in the United Nations and has resulted in the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT)².

We have seen the growing interest in land tenure and land degradation in international and national UNC-CD discussions, which have resulted in the Conceptual Framework on Land Degradation Neutrality and also in the development of a Land Degradation Neutrality Fund. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is developing an international assessment on land degradation and restoration which will be finalised in 2018. The Intergovernmental Panel on Climate Change (IPCC) is commissioning a Special Report on Climate Change and Land, to be ready in 2019, which will address desertification, land degradation, sustainable land management and greenhouse gas emissions. The Sustainable Development Goals (SDGs) embody these considerations and the interconnectedness of soil, land governance, land degradation and restoration, and climate change.

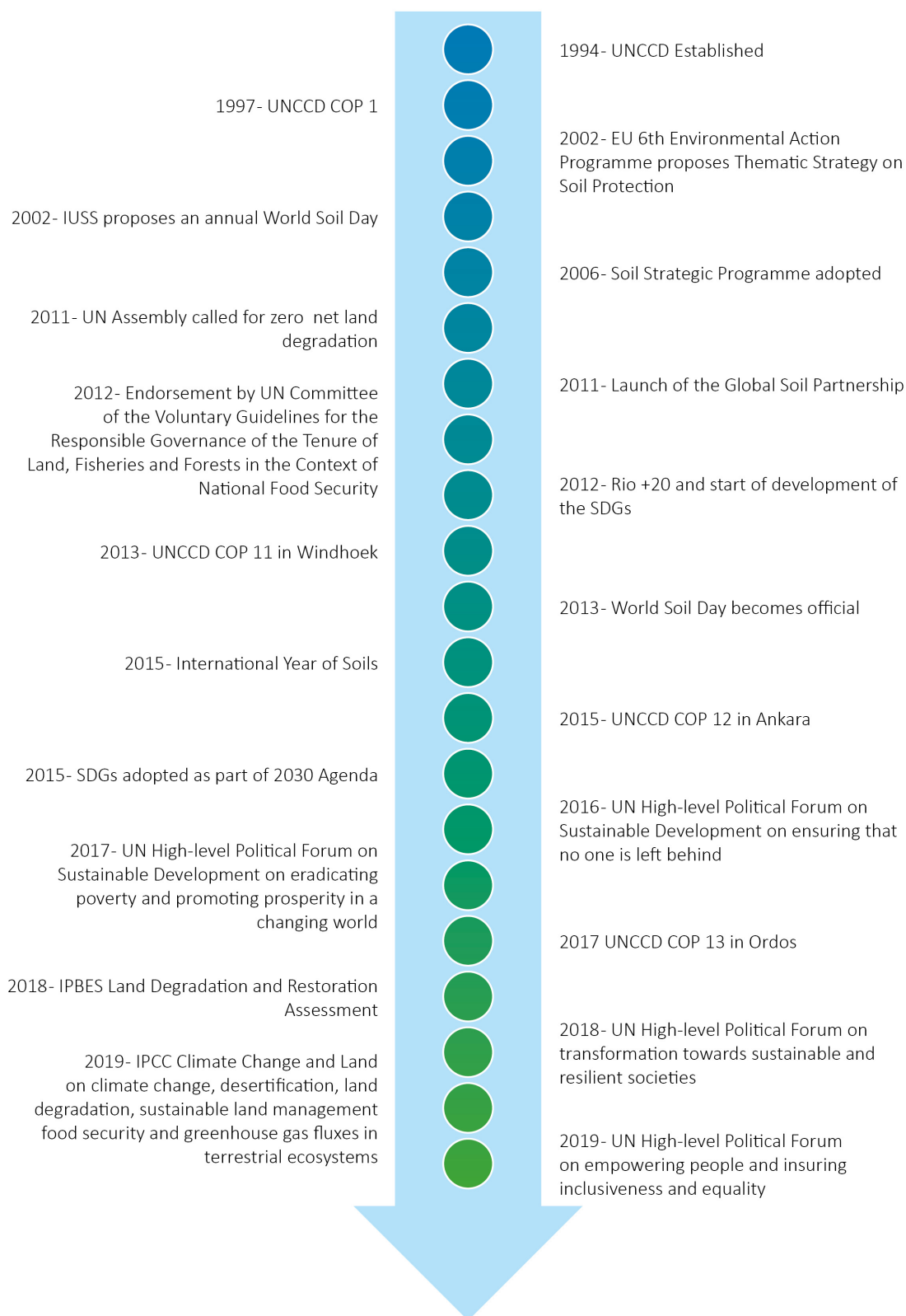
Therefore, one can conclude that soil and land are gradually getting back into the heart of policy debates.

This paper seeks to offer an analysis of the linkages of the SDGs with land use (decisions) and soil health and to provide insights on and recommendations for the opportunities of the SDGs to enhance soil and land management and restoration. To put these connections into perspective, what follows is a succinct overview of the most recent policy developments (Section 2) and a study of the most relevant SDGs and targets concerning soils and land use (Section 3), followed by an overview of the implications for policy makers, land users, farmers, the private sector, civil society and academics (Section 4).

¹ The terms 'soil health' and 'soil quality' are becoming increasingly familiar worldwide. A modern consensus definition of soil health is "the continued capacity of the soil to function as a vital living ecosystem that sustains plants, animals and humans" (USDA-NRCS, 2012).

² FAO (2012) Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security <http://www.fao.org/docrep/016/i2801e/i2801e.pdf> (accessed 6 June 2017).

Figure 1: Timeline of international stepping stones land and soil related SDGs



2. Introduction to the Sustainable Development Goals

Origin, objective and interconnectedness of the SDGs

Unanimously adopted by 193 UN Member States and launched in September 2015, the SDGs sit at the heart of the 2030 Agenda for Sustainable Development³. These 17 goals aim to advance sustainable development in the world by employing a holistic approach in simultaneously advancing social inclusion, environmental sustainability and economic development⁴. The 2030 agenda builds upon the achievements of the Millennium Development Goals (MDGs), which were set for 2000-2015, and fills the gaps that were insufficiently addressed by the MDGs^{5,6}. Whereas the MDGs were directed towards developing countries being 'assisted' and 'helped' by developed countries, the SDGs are applicable to all countries and divide responsibilities across both developing and developed countries.

The Rio+20 Conference took place in Rio de Janeiro in June 2012; this conference's outcome document, 'The Future We Want' (articles 245-251), officially spurred the development of the SDGs. In the interest of creating a new, people-centred development agenda, global consultations were conducted online and offline. Civil society organisations, scientists, academics, the private sector, citizens, local authorities, national governments and international organisations from around the world were actively engaged in the process. The results of these consultations fed into the negotiations between the UN Member States to develop the final SDGs⁷ in 2015.

The 17 SDGs are a reference framework for different actors. Although the SDGs are not legally binding, the 193 member states are strongly expected to integrate the goals in their domestic and foreign policies⁸. The SDGs are meant to integrate into international, national and regional debates on policy making and implementation and member states have the primary responsibility to do so. Alignment with international human rights and environmental law can strengthen the enforceability of the SDGs⁹. Due to the public commitments and attention for the SDGs, they can serve for all actors, from policy makers and citizens to academics, civil society and the private sector, as a collective language for the discussion of the implementation and progress of sustainable development; furthermore, individuals can align their goals with the 2030 Agenda.

The SDGs are characterised by:

1. **Interconnectedness:** The goals are interconnected via targets and cross-cutting issues, such as land; the goals are also connected via people across regions and borders.

3 UN (NA) 'Historic New Sustainable Development Agenda Unanimously Adopted by 193 UN Members' <http://www.un.org/sustainabledevelopment/blog/2015/09/historic-new-sustainable-development-agenda-unanimously-adopted-by-193-un-members/> (accessed 6 June 2017).

4 UN (2015) Transforming our world: the 2030 Agenda for Sustainable Development <https://sustainabledevelopment.un.org/post2015/transformingourworld> (accessed 6 June 2017).

5 SDG.guide (NA) Chapter 1: Getting to know the Sustainable Development Goals <https://sdg.guide/chapter-1-getting-to-know-the-sustainable-development-goals-e05b9d17801> (accessed 6 June 2017).

6 The Hunger Project (2014) MDGs to SDGs: Top 10 Differences <https://advocacy.thp.org/2014/08/08/mdgs-to-sdgs/> (accessed 6 June 2017).

7 Anderson, A (2013) The (Tangled) Road Map to September's U.N. General Assembly Meeting on the Post-2015 Development Agenda <https://www.brookings.edu/blog/education-plus-development/2013/02/15/the-tangled-road-map-to-septembers-u-n-general-assembly-meeting-on-the-post-2015-development-agenda/> (accessed 6 June 2017).

8 UN (NA) The Sustainable Development Agenda <http://www.un.org/sustainabledevelopment/development-agenda/> (accessed 5 July 2017).

9 Miller-Dawkins, M. (2014) Global goals and international agreements: Lessons for the design of the Sustainable Development Goals, Overseas Development Institute (accessed 5 July 2017).

2. **Accountability:** The goals refer to the relationship between rights holders and duty bearers. The goals encourage the duty bearers to take responsibility for the fulfilment of human rights and embolden the rights holders to hold the duty bearers accountable for this responsibility.

3. **Commitment to “Leave No One Behind”:** The goals encourage sustainable development for all.

Overview of the 17 SDGs



Monitoring the implementation of the SDGs

The 17 SDGs are divided into 169 targets and 230 indicators, which are used to monitor the progress of the SDGs. The indicator framework was developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs), based on a process of open consultations and working groups¹⁰.

The IAEG-SDGs has categorised the indicators based on existence of an international standard and data availability for the indicator. The group has categorised the indicators according to the following three tiers:

- Tier 1: Indicator is conceptually clear, has an internationally established methodology and standards are available, and data are regularly produced by countries for at least 50 per cent of countries and of the population in every region where the indicator is relevant.
- Tier 2: Indicator is conceptually clear, has an internationally established methodology and standards are available, but data are not regularly produced by countries.
- Tier 3: No internationally established methodology or standards are yet available for the indicator, but methodology/standards are being (or will be) developed or tested¹¹.

According to the IAEG-SDGs:

As of 20 April 2017: the updated tier classification contains 82 Tier 1 indicators, 61 Tier 2 indicators and 84 Tier 3 indicators. In addition to these, there are 5 indicators that have multiple tiers (different components of the indicator are classified into different tiers).¹²

The indicators have been (partly) integrated into national monitoring schemes; therefore, member states can report on the indicators' progress. The indicator framework will provide insights into the impacts and results of the SDGs. Yet, at the same time, the challenge remains in the collecting, analysing and processing of the necessary data for reporting¹³.

¹⁰ UNSTATS <https://unstats.un.org/sdgs/iaeg-sdgs/> (accessed 6 June 2017).

¹¹ IAEG SDGs IAEG-SDGs Tier Classification for Global SDG Indicators <https://unstats.un.org/sdgs/iaeg-sdgs/tier-classification/> (accessed 05 July 2017).

¹² *ibid.*

¹³ Dunning, C. (2016) 230 Indicators Approved for SDG Agenda <https://www.cgdev.org/blog/230-indicators-approved-sdg-agenda> (accessed 6 June 2017).

Therefore, the High-level Political Forum¹⁴ was established. It is the United Nations' central platform for the follow-up and review of the 2030 Agenda for Sustainable Development and the SDGs. The High-level Political Forum meets regularly to monitor the implementation of the SDGs. In accordance with paragraph 84 of the 2030 Agenda:

The HLPF, under the auspices of ECOSOC, shall carry out regular reviews, in line with Resolution 67/290. Reviews will be voluntary, while encouraging reporting, and include developed and developing countries as well as relevant UN entities and other stakeholders, including civil society and the private sector. They shall be state-led, involving ministerial and other relevant high-level participants. They shall provide a platform for partnerships, including through the participation of major groups and other relevant stakeholders¹⁵.

Every meeting has a theme and focuses on a specific set of goals; though, the High-level Political Forum will annually consider Goal 17: Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development. Based on the voluntary reviews and dialogues with the major groups¹⁶ and other stakeholders¹⁷, HLPF will discuss the progress of the SDGs and give guidance on how to deal with challenges regarding the implementation of the Agenda 2030.

High-level Political Forum timeline

2018 Transformation towards sustainable and resilient societies.



2019 Empowering people and ensuring inclusiveness and equality.



The theme of the 2017 meeting of the High-level Political Forum is 'Eradicating poverty and promoting prosperity in a changing world'. In this meeting, seven goals will be reviewed in depth. Those highlighted in bold in the table below have significant or strong land and/or soil dimensions:



Goal 1: End poverty in all its forms everywhere.



Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.



Goal 3: Ensure healthy lives and promote well-being for all at all ages.



Goal 5: Achieve gender equality and empower all women and girls.



Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation.



Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.



Goal 17: Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development (this goal will be reviewed at each meeting of the High-level Political Forum).

¹⁴ The United Nations High-level Political Forum on Sustainable Development or HLPF replaced the Commission on Sustainable Development which had lasted for 20 years. The forum meets every 4 years at the level of Heads of State and Government under the auspices of the UN General Assembly and every year under the auspices of the Economic and Social Council.

¹⁵ UN Transforming our world: the 2030 Agenda for Sustainable Development, paragraph 84 <https://sustainabledevelopment.un.org/post2015/transformingourworld> (accessed 7 July 2017).

¹⁶ The official UN major groups are: Women, Children and Youth, Indigenous Peoples, Non-Governmental Organizations, Local Authorities, Workers and Trade Unions, Business and Industry, Scientific and Technological Community, Farmers and Persons with disabilities.

¹⁷ For example parliamentarians and UN System representatives.

3. Relevant SDGs for land use and soil health

Land use SDGs

To further illustrate the interconnections between several of the SDGs, soil health and sustainable land use, in the following sections we will look more closely at nine goals and fifteen related targets. We will also elaborate on the specifics of some of the most salient socio-economic (notably gender and land tenure aspects), ecological and governance dimensions that these SDGs bring to the fore; furthermore, we will examine how these translate into methodological approaches (e.g. in terms of measuring [levels of] environmental stress in relation to agricultural productivity and pollution) and concrete policy recommendations.

These are the land related SDGs and targets¹⁸:



SDG 1: End poverty in all its forms everywhere

- Target 1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, **ownership and control over land** and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.
- Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce **their exposure and vulnerability to climate-related extreme events** and other economic, social and **environmental shocks and disasters**.



SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

- Target 2.3: By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, **including through secure and equal access to land**, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.
- Target 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that **progressively improve land and soil quality**.



SDG 3: Ensure healthy lives and promote well-being for all at all ages

- Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and **soil pollution and contamination**.

¹⁸ UN Sustainable Development Knowledge Platform <https://sustainabledevelopment.un.org/sdgs> (accessed 26 June 2016).



SDG 5: Achieve gender equality and empower all women and girls

Target 5a: 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, in accordance with national laws.



SDG 10: Reduce inequalities within and among countries

Target 10.1: By 2030, progressively **achieve and sustain income growth of the bottom 40 per cent of the population** at a rate higher than the national average.



SDG 12: Ensure sustainable consumption and production patterns

Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and **significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment**.



SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Target 15.2: By 2020, promote the implementation of sustainable management of all types of forests, **halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally**.

Target 15.3: By 2030, **combat desertification, restore degraded land and soil**, including land affected by desertification, drought and floods, and **strive to achieve a land degradation-neutral world**.

Target 15.a: Mobilize and significantly **increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems**.



SDG 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels

Target 16.3: **Promote the rule of law** at the national and international levels and ensure equal access to justice for all.

Target 16.7: **Ensure responsive, participatory and representative decision-making** at all levels.



SDG 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

Target 17.6: **Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation** and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.

Target 17.16: **Enhance the Global Partnership for Sustainable Development**, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries.

SDG 1: End poverty in all its forms everywhere



Target 1.4

By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, **ownership and control over land** and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.

Indicator 1.4.2: Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure (Tier 3, Custodians: World Bank, UN-Habitat; partner agencies: FAO, UNSD, UN Women, UNEP, IFAD)¹

¹ Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 07 July 2017).

Target 1.5

By 2030, build the resilience of the poor and those in vulnerable situations and reduce their **exposure and vulnerability to climate-related extreme events** and other economic, social and **environmental shocks and disasters**.

Indicator 1.5.1: Number of deaths, missing persons and persons affected by disaster per 100,000 people (Tier 2, Custodian UNISDR, partner agencies UN-Habitat, UNEP, DESA Population Division)

Indicator 1.5.2: Direct disaster economic loss in relation to global gross domestic product (GDP) (Tier 2, Custodian UNISDR, partner agencies: UNEP, FAO)

Indicator 1.5.3: Number of countries with national and local disaster risk reduction strategies (Tier 2, custodian: UNISDR, partner agency: UNEP)¹

¹ Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 07 July 2017).

The establishment of the SDGs in 2015 involved a discussion around the need to recognise land user rights in the targets and indicators^{19,20}. This links to the wider debates on sustainable development in which the relevance of land user rights in social and economic rights has gained ground. The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT), adopted by the UN Committee on World Food Security in 2012, articulate the importance of land tenure rights of female and male farmers, pastoralists, customary land users, young, poor and Indigenous peoples in realising sustainable land use and the right to food, as well as the roles and responsibilities of governments, the private sector and civil society. Article 115 in 'The Future We Want' calls for the implementation of the tenure guidelines²¹.

Target 1.4 and the related indicators underpin the crucial role of tenure governance in both sustainable development and ending poverty. Secure land tenure rights enable people to sustainably use their land with a long-term view²². In many countries, particularly in the Global South, the majority of people do not have formally recognised rights to their land. In particular, women, pastoralists, indigenous peoples and young people often lack control over the land on which they live. This is increasingly problematic, as growing pressures caused by both demographic change and heightened demand for food, fodder, fuel and minerals (as a result of increased international trade) lead to increased competition for land and natural resources.

This ecological footprint articulates the linkages between the consumption of products in the EU and the production of these on lands in Southern countries. Consumers in EU have in this way an impact on tenure and use of land in Southern countries²³. In the Eastern European context, land rights of women and other more vulnerable people are often inferior to the rights of male land users²⁴. Yet, secure tenure rights may be a strong enabling factor for people to sustainably use their land, especially in an environment where they can access the right knowledge and means, which benefits soil health²⁵. Indicator 1.4.2 addresses these issues by referring to both legally recognised and perceived land (user) rights of women and men, and different tenure types, such as formal or customary rights²⁶.

Indicator 1.4.2. is categorized in Tier 3, meaning there are not yet suitable methods or instruments to effectively measure the progress on this indicator²⁷. The understanding of the indicator and its concepts is based on the VGGT, as the international leading guidelines on land tenure. As custodians, the World Bank and UN Habitat will stimulate the use of existing administrative data on registered lands and household surveys for monitoring purposes and assisting national governments. Yet, both are researching what additional data are needed and how these can be obtained.

Progress on indicator 1.4.2. will be measured by dealing with the data in two complementary ways: firstly by measuring the incidence of people with secure tenure rights over land among the total population; secondly by focusing on the perceived secure rights to land among the population or communities²⁸. A difficulty to measure the progress on this indicator is that countries are not obligated to monitor progress on this indicator. In the Netherlands for instance, the first monitoring report for the SDGs pointed out that The Netherlands (almost) completely complies with indicator 1.4.2, or that the

19 International Land Coalition (2015) Land Rights: An Essential Global Indicator for the Post-2015 SDGs http://www.landcoalition.org/sites/default/files/documents/resources/land_rights_an_essential_global_indicator_-_sep_2_2015_0.pdf (accessed 6 June 2017).

20 Cordes, K and J. Sachs (2015) Measuring Land Rights for a Sustainable Future <http://ccsi.columbia.edu/files/2015/10/Measuring-Land-Rights-for-a-Sustainable-Future-SDSN-Sept-22-2015.pdf> (accessed 6 June 2017).

21 UN (2012) Future We Want - Outcome document <https://sustainabledevelopment.un.org/futurewewant.html> (accessed 6 June 2017).

22 De Schutter, O. (2014) Report of the Special Rapporteur on the right to food - Final report: The transformative potential of the right to food http://www.srfood.org/images/stories/pdf/officialreports/20140310_finalreport_en.pdf.

23 European Environment Agency (NA) Ecological Footprint of European Countries <https://www.eea.europa.eu/data-and-maps/indicators/ecological-footprint-of-european-countries> (accessed 5 July 2017); Soy Coalition (2015) Soja tussenstand 2015 http://soycoalition.org/wp-content/uploads/2016/10/Soja_tussenstand_2015.pdf (accessed 5 July 2017).

24 Giovarelli, R. and Duncan, J. (1999) Women and Land in Eastern Europe and Central Asia <https://pdfs.semanticscholar.org/9862/fb88631160a0529cb1191f99fb71fc131046.pdf> (accessed 5 July 2017); Hands off the Land (NA) The European Union and the Global Land Grab https://www.tni.org/files/download/european_union_and_the_global_land_grab-a5.pdf (accessed 5 July 2017).

25 Giovarelli, R. and Duncan, J. (1999) Women and Land in Eastern Europe and Central Asia <https://pdfs.semanticscholar.org/9862/fb88631160a0529cb1191f99fb71fc131046.pdf> (accessed 5 July 2017).

26 Van Gelder, J. L. (2010). What tenure security? The case for a tripartite view. Land Use Policy, 27, 449–456.

27 Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 5 July 2017); UNSTATS Goal 1: End poverty in all its forms everywhere <https://unstats.un.org/sdgs/files/metadata-compilation/Metadata-Goal-1.pdf> (accessed 5 July 2017).

28 UNSTATS Goal 1: End poverty in all its forms everywhere <https://unstats.un.org/sdgs/files/metadata-compilation/Metadata-Goal-1.pdf> page 10 (accessed 5 July 2017).

indicator is not applicable for the country²⁹. A challenge remains to urge governments to report on the progress of the indicator.

Target 1.5 also has a strong, albeit indirect, land component. Without secure tenure rights, most farmers are reluctant to make the kinds of long-term investments in and improvements to their land that foster environmental resilience³⁰. Land tenure security can increase farmers' decision-making power and choices to implement farming techniques that include investing in soil health that are more resilient to climate change³¹. Investing in strong community forest tenure security has also been shown to be a cost-effective measure for climate-change mitigation when compared with other mitigation measures. For example, China's forest land tenure reforms have increased forestry's contribution to household income and reforestation, and have improved the ability of China's farmers to mitigate and adapt to climate change³².

SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture



Target 2.3

By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, **including through secure and equal access to land**, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.

Indicator 2.3.1: Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size (Tier 3, custodian: FAO)

Indicator 2.3.2: Average income of small-scale food producers, by sex and indigenous status (Tier 3, custodian: FAO, partner agency World Bank)¹.

¹ Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 07 July 2017).

Target 2.4

By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that **progressively improve land and soil quality**.

Indicator 2.4.1: Proportion of agricultural area under productive and sustainable agriculture (Tier 3, custodian: FAO, partner agency UNEP)¹.

¹ Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 07 July 2017).

The second SDG links hunger, food and nutrition security with sustainable agriculture³³, which illustrates the connection between environmental sustainability and social inclusion in the SDGs. While Target 2.3 focuses on the nexus of agricultural productivity and social inclusion, Target 2.4 zooms in on the relationship between agricultural productivity and the environment.

29 CBS (2017) Meten van SDGs: een eerste beeld voor Nederland, Centraal Bureau voor de Statistiek <https://www.cbs.nl/nl-nl/publicatie/2016/44/meten-van-sdgs-een-eerste-beeld-voor-nederland> (accessed 5 July 2017).

30 See for example: Lawry, S. et al (2014) The impact of land property rights interventions on investment and agricultural productivity in developing countries <https://www.campbellcollaboration.org/library/property-rights-interventions-investment-agriculture.html> (accessed 17 July 2017). Lovo, S (2016) Tenure Insecurity and Investment in Soil Conservation. Evidence from Malawi <http://www.sciencedirect.com/science/article/pii/S0305750X15002454> (accessed 17 July 2017).

31 FAO website 'Climate Change' page <http://www.fao.org/climate-change/news/detail/en/c/473073/> (accessed July 11, 2017).

32 Xu, Jintao, Andy White, and Uma Lele. (2010) China's Forest Land Tenure Reform: Impacts and Implications for Choice, Conservation and Climate Change. Washington: Rights and Resources Initiative, <https://www.researchgate.net/publication/239581532> (accessed Jul 15, 2017).

33 FAO's vision of sustainable food and agriculture is "of a world in which food is nutritious and accessible for everyone and natural resources are managed in a way that maintain ecosystem functions to support current as well as future human needs. In this vision, farmers, pastoralists, fisher folks, foresters and other rural dwellers have the opportunity to actively participate in, and benefit from, economic development, have decent employment conditions and work in a fair price environment. Rural men, women, and communities live in security, and have control over their livelihoods and equitable access to resources which they use in an efficient way." <http://www.fao.org/sustainability/background/en/> (accessed 6 July 2017).

This attention is also translated into Indicators 2.3.1 and 2.3.2, which focus on income and increased production per land user (not per hectare), and Indicator 2.4.1, which aims to grasp the area under productive and sustainable agriculture. There is tension between the volume produced per unit of labour by classes of enterprise size (2.3.1) and the area under productive and sustainable agriculture (2.4.1). Because the former may imply intensified agricultural production, the question that is next raised is, how can production be intensified sustainably? In addition, the three targets may suggest that land users or workers per area will decrease so that the produced volumes per unit of labour will increase (bulk-wise, not the nutritional value), while at the same time, the income of land users will be monitored. These targets might influence the creation of policies that promote large-scale agricultural systems (monocultures and bulk production), where only a small number of people will find employment.

The challenge posed in realising SDG 2 is balancing productivity increases, environmental sustainability and social inclusion in agricultural and food systems, especially in the long run.

Olivier De Schutter, the former Special Rapporteur on the right to food, argues that agricultural techniques that both have a low level of external inputs and preserve agricultural biodiversity, such as agroecology, have shown increased food production ratios at different farms and in various areas³⁴. The International Panel of Experts on Sustainable Food Systems (IPES-Food) confirms that food production can especially increase when diversified agro-ecological methods are applied in situations of environmental stress due to climate change (such as drylands or soil degradation)³⁵.

The challenge posed in realising SDG 2 is balancing productivity increases, environmental sustainability and social inclusion in agricultural and food systems, especially in the long run. From this perspective, the interconnectedness of SDG 2 with other goals, like SDGs 3, 12, 15 and 16, becomes very relevant.

FAO is custodian of the indicators 2.3.1, 2.3.2 and 2.4.1. The FAO Statistics division, together with the International Fund for Agricultural Development (IFAD) and the World Bank, are developing a harmonised programme of Agricultural and Rural Integrated Surveys (AGRIS). These surveys can form the basis for the collection of data on several land-related SDG indicators. The AGRIS programme will provide methodological guidelines on how to conduct surveys in agriculture³⁶.

Indicator 2.3.1 has a Tier 3 classification. FAO comments that *sources of information can either be agricultural surveys or agricultural modules in integrated household surveys (e.g. LSMS-ISA) organised by national statistical agencies, with necessary support of the World Bank, the FAO and other international agencies, to ensure methodological rigour*³⁷.

For Indicator 2.3.2: Average income of small-scale food producers, by sex and indigenous status, FAO has not yet developed a methodology. FAO explains the following regarding the measurement methodology of Indicator 2.4.1:

Indicator 2.4.1 is defined by the following formula:

$$\text{\% of land under productive and sustainable agriculture} = \frac{\text{Area under productive and sustainable agriculture}}{\text{Agricultural area}}$$

Where: agricultural area = arable land + permanent crops + permanent meadows and pastures.

³⁴ De Schutter, O. (2010) Report submitted by the Special Rapporteur on the right to food, United Nations General Assembly. Retrieved from: http://www.srfood.org/images/stories/pdf/officialreports/20110308_a-hrc-16-49_agroecology_en.pdf.

³⁵ IPES-Food. (2016) From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems, International Panel of Experts on Sustainable Food systems. Retrieved from: http://www.ipes-food.org/images/Reports/UniformityToDiversity_FullReport.pdf.

³⁶ UNSTATS Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture <https://unstats.un.org/sdgs/files/metadata-compilation/Metadata-Goal-2.pdf> (accessed 01 June 2017).

³⁷ UNSTATS Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture, page 8 <https://unstats.un.org/sdgs/files/metadata-compilation/Metadata-Goal-2.pdf> (accessed 01 June 2017).

The *denominator* agricultural area is a well-known and established indicator that is collected by national statistical offices and compiled internationally by FAO. These data are available from the FAO's database, FAOSTAT.

The *numerator* which is the area under productive and sustainable agriculture captures the environmental, economic and social dimensions of production. The farm surveys, which are the proposed measurement instruments, will give countries the flexibility to identify issues that are most relevant to their priorities and challenges within these three sustainability dimensions. Land under productive and sustainable agriculture is thus those farms that satisfy the indicators selected across all three dimensions. The main points on which the numerator is based are as follows:

- Maintain the natural resource base in order to ensure sufficient productivity for the foreseeable future.
- Ensure a sufficient level of income in order to keep the livelihood of the entire family steadily above the poverty line and in accordance with the development objectives of the country.
- Provide access to safety nets, ensure flexibility in the face of both market and natural shocks and ensure clear ownership and tenure rights, with no discrimination on the basis of gender³⁸.

SDG 3: Ensure healthy lives and promote well-being for all at all ages



Target 3.9

By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and **soil pollution and contamination**.

Indicator 3.9.3: Mortality rate attributed to unintentional poisoning (Tier 2, custodian: WHO, partner agency World Bank)¹.

¹ Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 07 July 2017).

Healthy lives and well-being for all involve many aspects and topics. Target 3.9 specifically links human health to environmental health, such as air, water and soil. Since the Green Revolution began in the 1960s, agrochemicals have increasingly been used as pesticides (herbicides, fungicides, insecticides, insect growth regulators, nematicides, miticides, molluscicides, rodenticides, etc.) and fertilisers to improve agricultural yields³⁹.

However, the Green Revolution came at a high social and environmental cost, including the depletion of soils, the pollution of groundwater, and increased inequalities among farmers. Furthermore, the productivity gains were not always long-term sustainable⁴⁰. The runoff and infiltration of these agrochemicals, which contain toxic substances and nutrients such as nitrogen and phosphorus, affect the air, water and soil health, and therefore human lives⁴¹. In addition to the impacts that pollution has on communities and the ecosystem, the health of farmers and workers using these agrochemicals, due to direct contact or long-term exposure, is also impacted; in fact, the agrochemicals may lead to unintentional poisoning (see Indicator 3.9.3).

Although awareness on the impacts of agrochemicals has risen throughout the years, the challenge remains to reduce their usage in order to ensure healthy lives and well-being for all. In this regard, it is also important to look at SDG 14 on oceans, where Target 14.1 states: By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution. The corresponding indicator (14.1.1) is: Index of coastal eutrophication and floating plastic debris density.

³⁸ UNSTATS Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture, page 10 <https://unstats.un.org/sdgs/files/metadata-compilation/Metadata-Goal-2.pdf> (accessed 01 June 2017).

³⁹ Hill, E. (2014). The Benefits and Costs of the Green Revolution. Retrieved from <http://www.trunity.net/sam2/view/article/51cbf44f7896bb-431f6af545>.

⁴⁰ De Schutter, O and G. Vanloqueren (2011) The New Green Revolution: How Twenty-First-Century Science Can Feed the World. Solutions Journal, 2 (4) (2011): 33-44.

⁴¹ UNEP, Where Nutrients Come From and How They Cause Eutrophication, Lakes and Reservoirs Volume 3. Retrieved from http://www.unep.or.jp/ietc/publications/short_series/lakereservoirs-3/3.asp (accessed 6 June 2017).

The Special Rapporteur on the right to food, together with the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, argues:

Today, hazardous pesticides are in excessive use, inflicting damage on human health and ecosystems around the world, and their use is poised to increase in the coming years. Safer practices exist and can be developed further to minimise the impacts of such excessive, in some cases unnecessary, use of pesticides that violate a number of human rights. A rise in organic agricultural practices in many places illustrates that farming with less or without any pesticides is feasible. Studies have indicated that agroecology is capable of delivering sufficient yields to feed the entire world population and ensure that they are adequately nourished⁴².

Ferew Lemma of the Ethiopian Ministry of Health turned this issue around during the Global Soil Week 2017 in Berlin by stating:

Nutrition starts in the soil. Whatever grows is what we eat: microminerals in our foods come from our soils. Soil is the foundation of nutrition and health and ultimately our food security. Take care of the soil and the soil will take care of you⁴³.

Soil is the foundation of nutrition and health and ultimately our food security. Take care of the soil and the soil will take care of you.

The World Health Organisation (WHO) as custodian of Indicator 3.9.3 has proposed a guideline for measurement. It suggests:

The methods used for the analysis concerning causes of death depend on the type of data available from countries. For countries with a high-quality vital registration system, including

information on causes of death, the vital registration that member states submit to the WHO Mortality Database can be used, with adjustments where necessary, e.g. for the under-reporting of deaths. For countries without high-quality death registration data, the causes of death estimates can be calculated using other data, including household surveys with verbal autopsies, samples, sentinel registration systems, special studies and surveillance systems. In most cases, these data sources are combined in a modelling framework⁴⁴.

42 Hilal, E. (2017) Report of the Special Rapporteur on the right to food (A/HRC/34/48), UN Human Rights Council. <http://daccess-ods.un.org/access.nsf/Get?Open&DS=A/HRC/34/48&Lang=E> (accessed 01 June 2017).

43 Speech delivered during the opening plenary at the Global Soil Week 22 May 2017.

44 UNSTATS metadata Goal 3: Ensure healthy lives and promote well-being for all at all ages; Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination; Indicator 3.9.3: Mortality rate attributed to unintentional poisoning, page 2 <https://unstats.un.org/sdgs/metadata/files/Metadata-03-09-03.pdf> (accessed 01 June 2017).

SDG 5: Achieve gender equality and empower all women and girls



Target 5a

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, in accordance with national laws.

Indicator 5.A.1: (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure (Tier 2, custodians FAO, UN Women, UNSD, partner agencies UNEP, World Bank, UN-Habitat)

Indicator 5.A.2: Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control (Tier 3, FAO, World Bank, UN Women)¹

¹ Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 14 July 2017).

Target 5 of SDG 5 integrates gender, land use and tenure rights. While mainstreaming gender in various parts of policies and practices is often a challenge, gender commitments within the SDGs are not limited to one goal. Gender and women's rights are also integrated into other SDGs, for instance, through sex-segregated indicators or targets.

Women and men play different roles when it comes to land use. On a global scale, women produce more than half of all the world's food. In sub-Saharan Africa and the Caribbean, they grow up to 80 per cent of basic food. In Asia, they provide from 50 to 90 per cent of the labour for rice cultivation. In China, women provide over 50% of all agricultural labour⁴⁵. In addition, women are primarily responsible for preparing, storing and processing food. They also handle livestock, gather food, fodder and fuelwood and manage the domestic water supply, as well as providing most of the labour for post-harvest activities⁴⁶.

On a global scale, women produce more than half of all the world's food. In sub-Saharan Africa and the Caribbean, they grow up to 80 per cent of basic food. In Asia, they provide from 50 to 90 per cent of the labour for rice cultivation. In China, women provide over 50% of all agricultural labour.

Despite this, it is men that regularly have more direct access to land tenure and land-related assets⁴⁷ (see Figure 2). For example, across Europe, women typically own less than 30 per cent of landholdings, with only Italy, Austria, Romania and the Baltic States faring better. In China, women are legally guaranteed land tenure rights equal to men. However, a 2011 survey of over 1,700 households across 17 provinces indicated that only 17.1% of the existing contracts and 38.2% of the existing certificates include women's

names⁴⁸. Compared to men, women often participate less in decision-making processes at both the community level and in broader political processes. In the spirit of the SDGs to "Leave No One Behind", it is, therefore, important to monitor access to ownership and control over land, as incorporated in Target 5a and the related indicators⁴⁹.

⁴⁵ FAO (2011) The role of women in agriculture <http://www.fao.org/docrep/013/am307e/am307e00.pdf> (accessed 17 July 2017).

⁴⁶ UN Food and Agriculture Organization website (accessed 11 July 2017) <http://www.fao.org/docrep/x0262e/x0262e16.htm>.

⁴⁷ UNCCD (2016) Turning the Tide – the gender factor in achieving Land Degradation Neutrality. Retrieved from: http://www2.unccd.int/sites/default/files/documents/2017_Gender_ENG.pdf.

⁴⁸ Study conducted by Landesa <https://www.landesa.org/china-survey-6/>.

⁴⁹ De Schutter, O. (2013) Gender and the Right to Food, Office of the United Nations High Commissioner for Human Rights. Retrieved from: http://www.ohchr.org/Documents/Issues/Food/20130304_gender_execsummary_en.pdf.

Indicator 5.a.1 (a) and (b) on women's ownership of or secure rights to agricultural land is already disseminating by the FAO through the FAO Gender and Land Rights Database. The indicator is classified as Tier 2 and FAO is together with UN Women, UNSD custodian of the indicator. As of May 2015, the database included 83 country profiles, which contain key information on women's land rights and information about customary land tenure and gender and land-related policies. The database has a tool for assessing the extent to which national legal frameworks enable gender-equitable land tenure, assessing 30 legal indicators in different countries⁵⁰.

For indicator 5.a.2, a guideline for measurement has been developed by the FAO. Indicator 5.a.2 is classified as Tier 3. The data is currently being collected through FAO's Legal Assessment Tool for gender-equitable land tenure. Indicator 5.a.2 collects policy objectives, draft provisions, existing legal provisions and implementing legislation which reflects good practices and that guarantee women's land (user) rights. Information is then classified by stage of incorporation into the policy and legal framework, using a scale from 0 to 4:

Stage 0: Absence of all proxies in the legal framework

Stage 1: A draft policy document provides for the adoption of one or more proxy

Stage 1.5: A formally adopted policy document provides for the adoption of one or more proxy

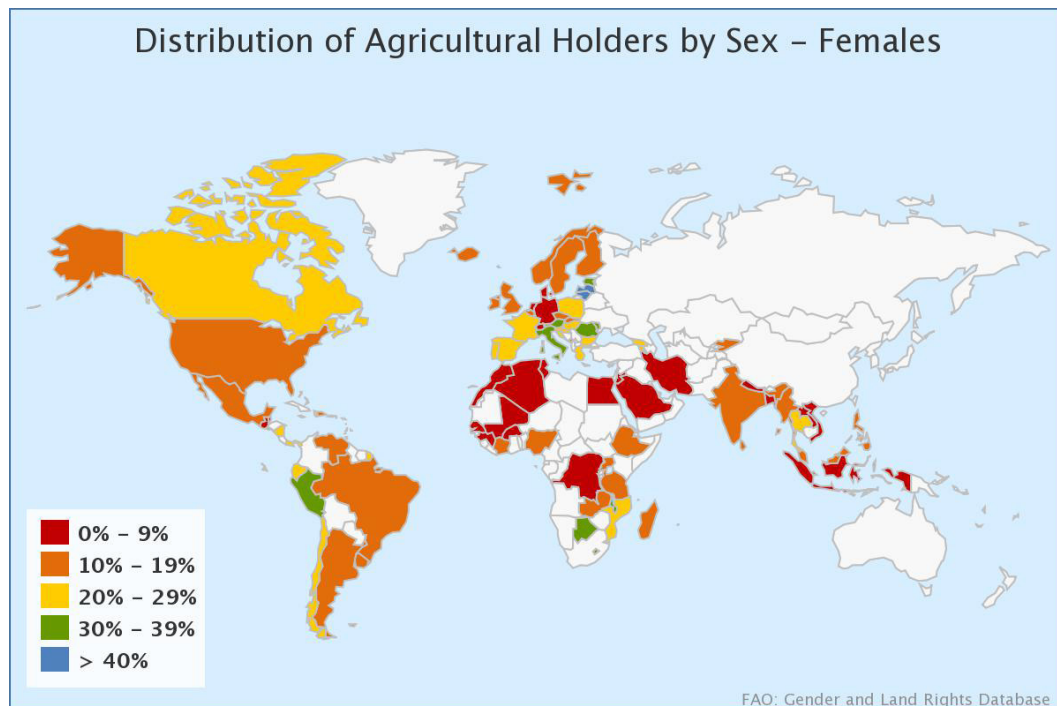
Stage 2: A bill contains one or more proxy

Stage 3: Primary law contains one or more proxy

*Stage 4: Secondary legislation contains one or more proxy*⁵¹.

Twenty-three countries are currently assessed through the Legal Assessment Tool, namely Cambodia, Chile, China, Colombia, Ecuador, Ethiopia, Ghana, Guatemala, Kenya, Madagascar, Mali, Mexico, Mongolia, Morocco, Nepal, Nicaragua, Panama, Peru, Rwanda, Sierra Leone, South Africa, Tunisia and Uruguay⁵².

Figure 2: Women's Share of Land Ownership Worldwide



Source: FAO Gender and Land Rights Database: <http://www.fao.org/gender-landrights-database/data-map/statistics/en/>


⁵⁰ FAO Gender and Land Statistics - Recent developments in FAO's Gender and Land Rights Database (2015) and FAO Gender and Land Rights Database <http://www.fao.org/gender-landrights-database/data-map/statistics/en/> (accessed 6 June 2017).

⁵¹ UNSTATS Goal 5: Achieve gender equality and empower all women and girls; Target 5.a: 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, in accordance with national laws; Indicator 5.a.2: Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership or control, page 4 <https://unstats.un.org/sdgs/metadata/files/Metadata-05-0A-02.pdf> (accessed 01 June 2017).

⁵² Gender and Land Rights Database <http://www.fao.org/gender-landrights-database/legislation-assessment-tool/en/> (accessed 7 July 2017).

SDG 10: Reduced Inequalities

10 REDUCED INEQUALITIES



Target 10.1
By 2030, progressively **achieve and sustain income growth of the bottom 40 per cent of the population** at a rate higher than the national average.

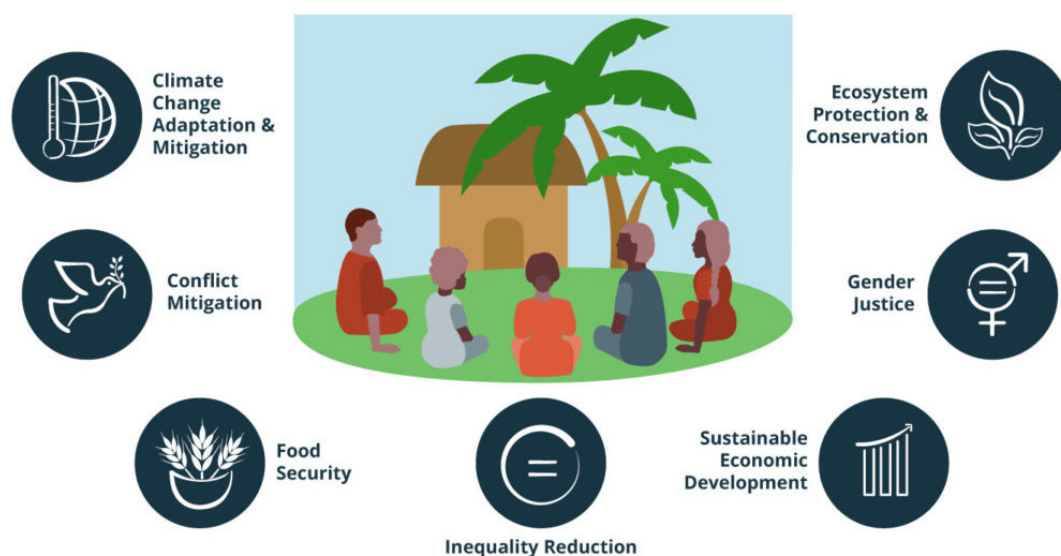
Indicator 10.1.1: Growth rates of household expenditure or income per capita among the bottom 40 per cent of the population and the total population (Tier 1, Custodian: World Bank)¹

1 Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 07 July 2017).

Land ownership and land tenure are critical factors in determining levels of inequality within countries, and thus has a direct bearing on achieving target 10.1. Even in an era of hyper-globalisation, land retains primary importance as a factor of production, store of wealth, and source of status⁵³.

This is especially true in predominantly agrarian societies. Land plays a central role in sustaining rural livelihoods and income generation, and the allocation of land holdings influences the ability of households to exploit farm assets and invest in farm technologies⁵⁴. A relatively even distribution of land holdings therefore tends to correlate with a narrower gap in extremes between rich and poor households.

Figure 3: Links Between Secure Land Rights for Women and SDGs



Source: Rights and Resources International http://rightsandresources.org/wp-content/uploads/2017/05/Secure_Community_Land_Rights_Women_SDGs-1024x687.jpg

At the same time, insecure secure land rights limits investment and the up-take of new approaches, practices and technologies in agriculture and undermines sustainable land management. Insecure land rights are thus a major source of social and economic inequality around the world. Increasing tenure security can allow rural households – even those producing on relatively small parcels of land – to invest in their farms through adopting longer-term measures such as soil erosion controls, agro-forestry systems, fishponds and the introduction of new experimental technologies. These types of investments typically increase the overall incomes and long-term resilience of small farms, helping to close the gap between household earnings⁵⁵.

53 Faguet, J.P. et al. (2016) "The Paradox of Land Reform, Inequality and Local Development in Colombia" http://eprints.lse.ac.uk/67193/1/Faguet_Paradox%20of%20land%20reform_2016.pdf.

54 Naseer, A; Ashfaq, M; Abid, M; Razzaq, A. and Hassan, S. (September 2016) Current Status and Key Trends in Agricultural Land Holding and Distribution in Punjab, Pakistan: Implications for Food Security https://www.researchgate.net/publication/307628146_Current_Status_and_Key_Trends_in_Agricultural_Land_Holding_and_Distribution_in_Punjab_Pakistan_Implications_for_Food_Security (accessed Jul 10, 2017).

55 See for example: Lawry, S. et al (2014) The impact of land property rights interventions on investment and agricultural productivity in developing countries <https://www.campbellcollaboration.org/library/property-rights-interventions-investment-agriculture.html> (accessed 17 July 2017)
Lovo, S (2016) Tenure Insecurity and Investment in Soil Conservation. Evidence from Malawi <http://www.sciencedirect.com/science/article/pii/S0305750X15002454> (accessed 17 July 2017).

Land ownership and land tenure are critical factors in determining levels of inequality within countries.

Within households, increasing land tenure security for women – who in many countries are the primary food producers – is a vital strategy for enabling rural women to achieve income parity with men, and to raise their social status (also relating to target 5.a). As noted by UNRISD (2006), gender-based inequalities in access to land exacerbate married women's (unpaid) workloads, economic insecurity, and limited bargaining power within households⁵⁶.

SDG 12: Ensure sustainable consumption and production patterns



Target 12.4

By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and **significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.**

Indicator 12.4.1: Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement (Tier 1, Custodian: UNEP)

Indicator 12.4.2: Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment (Tier 3, Custodian: UNSD, UNEP, partner organisations: OECD, Eurostat)¹

¹ Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 07 July 2017).

As food production and consumption lead to substantial environmental and human health impacts, Target 12.4 aims to reduce the release of chemicals and waste to the air, water and soil. This target relates to Target 3.9 to substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. There are currently more than 40 international multilateral environmental agreements worldwide⁵⁷.

However, not all of these agreements have been ratified by every country. Furthermore, the efficiency of the agreements depends on the extent to which they are implemented in each country's legal framework and in practice⁵⁸. There are four international multilateral environmental agreements on chemicals or waste, namely:

- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (into force in 1992).
- The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (into force in 2004).
- The Stockholm Convention on Persistent Organic Pollutants (into force in 2004).
- The Minamata Convention on Mercury (not yet in force).

Measuring Indicator 12.4.1 thus covers a commitment of states, not the actual implementation of it. Indicator 12.4.4 is classified as Tier 1.

Statistics for the overall hazardous waste generated per capita, as Indicator 12.4.2 refers to, have already been collected at the international level by United Nations Statistics Division, Secretariat

⁵⁶ UNRISD (January 2006) "Land Tenure Reform and Gender Equality" UNRISD Research and Policy Brief 4 <http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1898&context=globaldocs>.

⁵⁷ The MEA Information and Knowledge Management (IKM) Initiative brings together the Multilateral Environmental Agreements (MEA) to develop harmonized and interoperable information systems for the benefit of the Parties and the environment community at large. www.informea.org.

⁵⁸ Raustiala, K. (2001) Reporting and Review Institutions in 10 Selected Multilateral Environmental Agreements UNEP.

of the Basel, Rotterdam and Stockholm Conventions, Organisation for Economic Co-operation and Development (OECD) and Eurostat.

However, the concepts and definitions behind these statistics are not all described by internationally agreed methodologies and are not entirely harmonised among these entities, therefore Indicator 12.4.3 is classified as Tier 3. The United Nations Environmental Programme and the United Nations Statistics Division expect to have a methodology developed by the end of 2017⁵⁹.

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss



Target 15.2

By 2020, promote the implementation of sustainable management of all types of forests, **halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.**

Target 15.3

By 2030, **combat desertification, restore degraded land and soil**, including land affected by desertification, drought and floods, and **strive to achieve a land degradation neutral world.**

Target 15.a

Mobilize and significantly **increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.**

Indicator 15.2.1: Progress towards sustainable forest management (Tier 2, custodian: FAO)

Indicator 15.3.1: Proportion of land that is degraded over total land area (Tier 3, custodian: UNCCD, partner agencies: FAO, UNEP)

Indicator 15.a.1: Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems (Tier 1/3, Custodians OECD, UNEP, World Bank)¹

¹ Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 07 July 2017).

Goal 15, relating to the protection and restoration of terrestrial ecosystems, has several crucial land-related components. Target 15.2, which concerns the protection of forests and efforts towards reforestation, is arguably impossible to achieve without parallel efforts to secure the land rights of forest-based communities.

A growing body of evidence underscores that secure land rights for forest communities are the best defence against forest destruction⁶⁰. This reflects the growing recognition of the limits of centralised state natural resource management and the role strengthened and devolved land rights for communities plays in the conservation and stewardship of natural resources. Conversely, the maintenance of forests is vital to the food and livelihood security of rural farming households in the Global South. For example, one comprehensive global study in 2014 revealed that forests contribute almost as much to rural incomes as agricultural crops, with about 28 per cent of total household income derived from forests and other natural areas⁶¹. The FAO is the custodian agency providing guidance on Indicator 15.2.1, which was upgraded in 2016 from a Tier 3 to a Tier 2 indicator.

Target 15.3 is designed to galvanise action to combat land degradation and desertification. Out of the world's 192 UN Member States, 169 have declared that they are affected by land degradation⁶². In 2015, The Economics of Land Degradation (ELD) Initiative released a report estimating that the global econ-

⁵⁹ UNEP Goal 12: Ensure sustainable consumption and production patterns; Target: 12.4; Indicator and Name: 12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment http://uneplive.unep.org/media/docs/projects/12_4_2_work_plan.pdf (accessed 10 June 2017).

⁶⁰ See for example studies by the World Resources Institute: <http://www.wri.org/our-work/project/securing-rights>.

⁶¹ Published by the Poverty and Environment Network, an initiative of the Centre for International Forestry Research (CIFOR). <http://blog.cifor.org/21825/global-study-forests-livelihoods-poverty-pen>.

⁶² IISD SDG Knowledge Hub website (accessed July 11, 2017) <http://sdg.iisd.org/commentary/guest-articles/17-sdgs-but-is-there-a-priority-sdg-target/>.

omy forfeits ecosystem services valued at US\$6.3-\$10.6 trillion every year through soil and land degradation and habitat loss; equivalent to 10-17% of world GDP. Indicator 15.3.1 is classified as Tier 3. The UNCCD is the custodian to give guidance on Indicator 15.3.1.

One concept that has gained traction as a way of assessing, controlling and countering land degradation (including soil loss) is Land Degradation Neutrality (LDN). The purpose of LDN is to maintain or even improve the amount of healthy and productive land resources over time and in accordance with national priorities for sustainable development. LDN is a goal that can be achieved at local, national and even regional scale. At the heart of LDN are sustainable land management (SLM) practices that result in sufficient yield and enhance the resilience of the land and land-dependent communities, while simultaneously avoiding land degradation. Because the SDGs primarily encourage national level action, striving to achieve a land degradation neutral world has been interpreted as, “a world where nations individually strive to achieve land degradation neutrality”⁶³.

Out of the world's 192 UN Member States, 169 have declared that they are affected by land degradation.

The focus and aim of LDN is to maintain and improve the productivity of the land through sustainable management and the restoration of the soil, water and biodiversity, while contributing to SDG 1 (no poverty), SDG 2 (zero hunger), SDG 6 (clean water and sanitation), SDG 13 (climate action) and the implementation of the VGGT. According to UNCCD:

*LDN does not advocate for market-based offset or compensation schemes, which have been proven to be complex, problematic and generally ineffective*⁶⁴.

LDN encourages inclusive and participatory land use planning at local, national and regional levels through disaggregated targets for SLM and ecosystem restoration. It provides the flexibility to establish baselines for monitoring, to evaluate trade-offs and to prioritise action on the ground at the appropriate scale⁶⁵.

The metrics for LDN are:

- Land cover (land cover change through nationally-refined FAO Land Cover Classification System (LCCS) classes).
- Land productivity (net primary productivity, tDM/ha/yr).
- Carbon stocks (soil organic carbon, tC/ha, to 30 cm).

If any of the three metrics shows significant negative change, it is considered a loss, or degraded land. Conversely, if at least one metric shows a significant positive change and none show a significant negative change, the result is considered a gain, or restored land⁶⁶.

Indicator 15.a.1 is classified as Tier 1 and III as it is compiled out of different components (Official Development Assistance and Public Expenditures). It is defined as the gross disbursements of the total official development assistance (ODA) for biodiversity from all donors (e.g. donors in the Development Assistance Committee of OECD, other donors and multilateral organisations). The sum of the ODA

63 UNCCD/Science-Policy Interface (2016). Land in balance. The scientific conceptual framework for land degradation neutrality (LDN). Science-Policy Brief 02. September 2016. http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/10_2016_spi_pb_multipage_eng.pdf (accessed 2 June 2017); Orr, B.J., A.L. Cowie, V.M. Castillo Sanchez, P. Chasek, N.D. Crossman, A. Erlewein, G. Louwagie, M. Maron, G.I. Metternicht, S. Minelli, A.E. Tengberg, S. Walter, and S. Welton. 2017. Scientific Conceptual Framework for Land Degradation Neutrality. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany. <http://www2.unccd.int/publications/scientific-conceptual-framework-land-degradation-neutrality> (accessed 2 June 2017).

64 UNCCD Land Degradation Neutrality - Frequently Asked Questions (FAQs) <http://www.unccd.int/en/programmes/RioConventions/RioPlus20/Pages/LDNFAQ.aspx> (accessed 15 June 2017).

65 Land Degradation Neutrality - Frequently Asked Questions (FAQs) <http://www.unccd.int/en/programmes/RioConventions/RioPlus20/Pages/LDNFAQ.aspx> (accessed 2 June 2017).

66 UNCCD/Science-Policy Interface (2016). Land in balance. The scientific conceptual framework for land degradation neutrality (LDN). Science-Policy Brief 02. September 2016. http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/10_2016_spi_pb_multipage_eng.pdf (accessed 2 June 2017); Orr, B.J., A.L. Cowie, V.M. Castillo Sanchez, P. Chasek, N.D. Crossman, A. Erlewein, G. Louwagie, M. Maron, G.I. Metternicht, S. Minelli, A.E. Tengberg, S. Walter, and S. Welton. 2017. Scientific Conceptual Framework for Land Degradation Neutrality. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany. <http://www2.unccd.int/publications/scientific-conceptual-framework-land-degradation-neutrality> (accessed 2 June 2017).

flows from the donors to the developing countries quantifies the public effort for biodiversity in these countries. The ODA marked for biodiversity is captured via the biodiversity marker in the Creditor Reporting System of the OECD; this marker was introduced to this system in 2002. The 'ODA' part is therefore classified as Tier 1. The 'public expenditures' part is classified as Tier 3 and has no work plan yet⁶⁷.

Indicator 15.a.1 does not include private sector resources, as these will be increasingly mobilised (for instance, through the LDN Fund). Monitoring these resources and determining the ways in which they contribute to LDN would also be very interesting.

SDG 16: Peace, Justice and Strong Institutions



Target 16.3

Promote the rule of law at the national and international levels and ensure equal access to justice for all

Target 16.7

Ensure responsive, participatory and representative decision-making at all levels

Indicator 16.3.1: Proportion of victims of violence in the previous 12 months who reported their victimisation to competent authorities or officially recognised conflict resolution mechanisms (Tier 2, Custodian UNODC, partner agencies UN Women, UNFPA, WHO)

Indicator 16.7.2: Proportion of population who believe decision-making is inclusive and responsive by sex, age, disability and population group (Tier 3, Custodian UNDP)¹

¹ Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 07 July 2017).

Insecure land rights are a major source of conflict around the world. Land is inextricably tied to the use and management of natural resources; including oil and gas, precious metals, minerals, timber and water. In many countries, uncertainty of land ownership has resulted in competition for control over these valuable resources, driving localised land grabbing and creating conflict between individuals, companies, communities and the state⁶⁸. In many cases, governments play an active role in this process, both by failing to adequately define and protect customary land rights and informal user rights, and by conducting land deals that violate the rights of communities. An estimated 93% of concessions granted to investors in emerging economies for extractive activities are already occupied, setting the stage for widespread expropriation and violence. A study of civil conflicts since 1990 has shown that land was at the root of the majority of them⁶⁹.

Insecure land rights are a major source of conflict around the world. Land is inextricably tied to the use and management of natural resources

Two targets within Goal 16 relate directly to these concerns. Target 16.3 directs states to "Promote the rule of law at the national and international levels and ensure equal access to justice for all". Upholding and implementing existing international and domestic laws would have a significant positive impact on community land tenure; while ensuring equal access to justice would enable millions of displaced people to get redress for past injustices. Target 16.7, meanwhile, encourages "participatory and representative decision-making". This relates to the concept of "free, prior and informed consent", enshrined in the UN Declaration on the Rights of Indigenous Peoples and the VGGT with regards to the right of indigenous communities to maintain control over decisions regarding if, when and how their

⁶⁷ 4th Meeting of the Inter-agency and Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs) Agenda Item 6, 7. Review of plans for Tier III indicators and review proposals of developments of indicators that currently do not have an agency involved in their development <https://unstats.un.org/sdgs/files/meetings/iaeg-sdgs-meeting-04/6-7.Tier%20III%20work%20plans-orphan%20indicators%20Plenary%20session.pdf>.

⁶⁸ Land Matters website (accessed July 11, 2017) <https://pages.devex.com/land-matters-conflict-resolution.html>.

⁶⁹ The World Bank website (accessed July 11, 2017) <http://blogs.worldbank.org/developmenttalk/ten-signs-impending-global-land-rights-revolution>.

traditional lands are used by others⁷⁰. It also relates directly to Principle 6 of the VGGT, which states the responsible governance of land should include consultation and participation of stakeholders affected by potential land use changes⁷¹. In addition, land deals in regions of weak governance are often associated with corruption⁷². As such, efforts to “substantially reduce corruption in all its forms”, as set out in Target 16.5, would have a hugely positive impact on land governance.

SDG 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development



Target 17.6

Enhance North-South, South-South and triangular regional and international co-operation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism

Target 17.16

Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries

Indicator 17.6.1: Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation (Tier 3, Custodian: UNESCO-UIS)

Indicator 17.16.1: Number of countries reporting progress in multi-stakeholder development effectiveness monitoring frameworks that support the achievement of the sustainable development goals (Tier 2, Custodians: OECD, UNDP, Partner agency UNEP)¹

¹ Tier Classification for Global SDG Indicators 20 April 2017 https://unstats.un.org/sdgs/files/Tier%20Classification%20of%20SDG%20Indicators_20%20April%202017_web.pdf (accessed 07 July 2017).

The above-mentioned goals are ambitious in striving for a sustainable world. Realising responsible governance of land, sustainable management and use of land, as well as ensuring healthy soils by 2030, require the commitment of various stakeholders. As SDG 17 points out, the SDGs are not solely a matter of the UN Member States; instead, there is a need for close collaboration with and between civil society organisations, scientists, academics, the private sector, citizens, local authorities, national governments and international organisations. These partnerships aim to develop and exchange expertise, knowledge and technology, as well as the mobilisation of financial resources.

The emphasis on multi-stakeholder partnerships is not new and has been incorporated in previous initiatives related to sustainable development and land. The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, for instance, stress that ‘responsible investments [...] should be made working in partnership with relevant levels of government and local holders of tenure rights to land, fisheries and forests, respecting their legitimate tenure rights’⁷³. The guidelines also strongly encourage states to organise multi-stakeholder platforms in local, national and international settings in order to implement the guidelines.

In addition, the 2015 Addis Ababa Action Agenda on Financing for Development points to the importance of cooperation to mobilise sufficient financial means for the realisation of the SDGs; furthermore, this agenda stimulates stakeholders to set up platforms through which capacities can be strengthened and scientific developments, technologies and innovations can be exchanged⁷⁴.

⁷⁰ <http://www.fao.org/docrep/016/i2801e/i2801e.pdf>.

⁷¹ *ibid.*

⁷² For a comprehensive review of this topic see: <https://www.icar.ngo/news/2016/11/15/tainted-lands-corruption-in-large-scale-land-deals>.
⁷³ FAO (2012) Voluntary Guidelines on the Responsible Governance of Tenure of Land, Forests and Fisheries. Retrieved at: <http://www.fao.org/docrep/016/i2801e/i2801e.pdf>.

⁷⁴ UN (2015) Addis Ababa Action Agenda of the Third International Conference on Financing for Development http://www.un.org/esa/ffd/wp-content/uploads/2015/08/AAAA_Outcome.pdf (accessed 6 June 2017).

Indicator 17.6.1 is classified as Tier 3 and its custodian is UNESCO-UIS. It is at the moment of writing not clear when a measurement methodology will be developed.

Indicator 17.16.1 is classified as Tier 2 and its custodians are OECD and UNDP. It assesses the number of countries that report progress on multi-stakeholder monitoring frameworks, which track effective development cooperation for the achievement of the SDGs. This indicator is presented as the global aggregate number of countries. According to OECD and UNDP:

For any country reporting on one (or more) multi-stakeholder development effectiveness framework(s), it is considered to be reporting progress when, for the year of reference, the number of indicators within the framework(s) that experienced a positive trend is greater than the number of indicators that experienced a negative trend (relative to the previous reporting round)...

The design of the indicator has practical benefits: (a) the indicator allows for relevant monitoring frameworks to be updated in line with evolving commitments and country specific context without affecting the spirit of the indicator; (b) the indicator does not presume a globally-set multi-stakeholder framework, acknowledging the diversity of complementary efforts supporting effective development cooperation; (c) the indicator allows participating countries to choose whether they would like to report as a provider of development co-operation, as a recipient, or both⁷⁵.

⁷⁵ UNSTATS Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development Target 17.16: Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the SDGs in all countries, in particular developing countries Indicator 17.16.1: Number of countries reporting progress in multi-stakeholder development effectiveness monitoring frameworks that support the achievement of the SDGs, pages 2-3 <https://unstats.un.org/sdgs/metadata/files/Metadata-17-16-01.pdf> (accessed 2 June 2017).

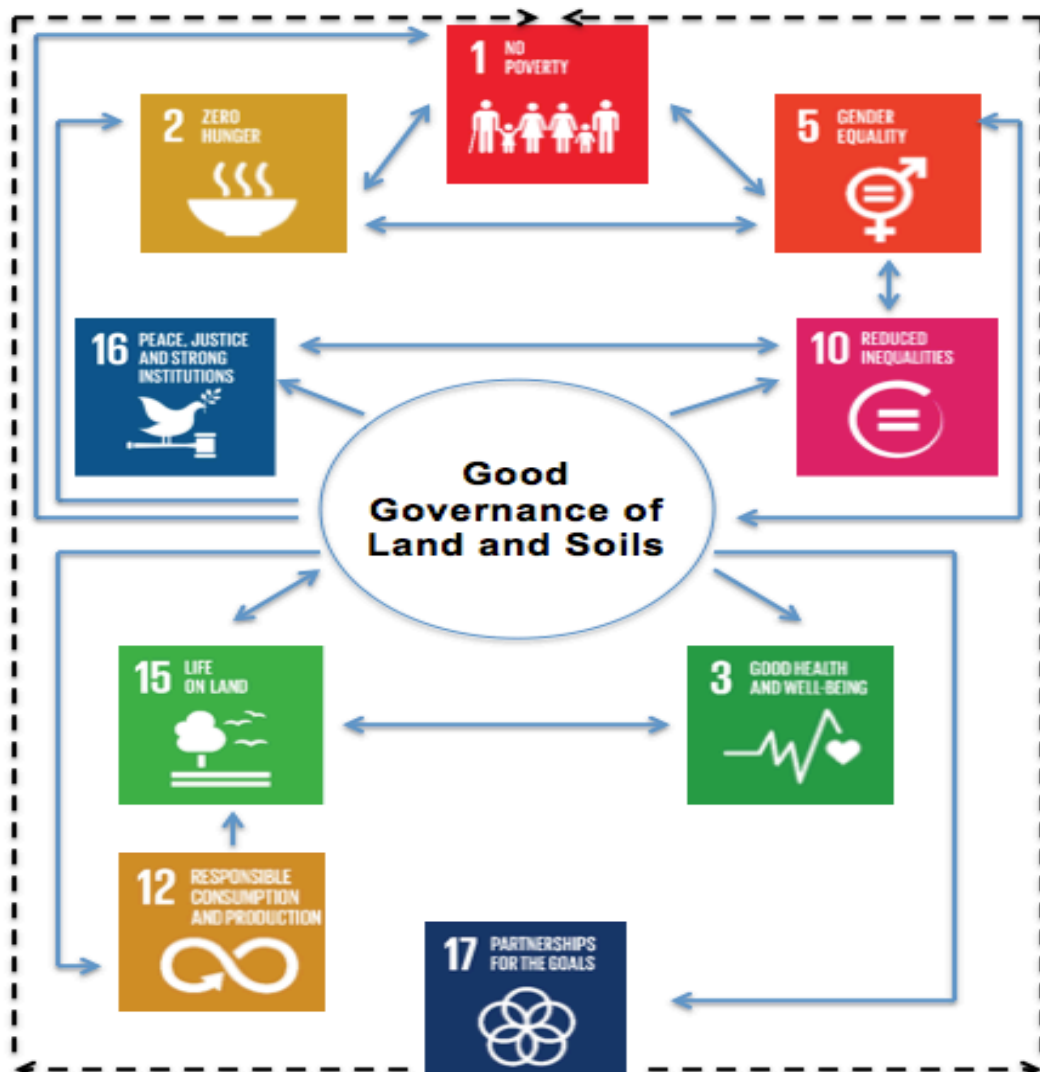
4. Implications of the SDGs

Implications of land use-related SDGs for policy makers

Although the 2030 Agenda sets out ambitious targets for global transformation, the SDGs are primarily directed towards countries, and hence need to be integrated into national policy frameworks in order to have real impact. In an era when many governments are faced with tight spending restrictions, politicians and policy makers will need to design measures that deliver synergistic outcomes to maximise the benefits of public investments. This is why good governance of and coherent policy regarding land and soils present a major opportunity for policy makers. Measures that promote sustainable land use, inclusive and participatory land use planning, LDN and land tenure security potentially help (and particularly emerging economies) to meet multiple SDGs, targets and indicators (see Figure 4 below), whilst also being cost-effective.

Good governance of and coherent policy regarding land and soils present a major opportunity for policy makers.

Figure 4: Linkages and Positive Feedbacks Between Good Land, Soils and SDGs



As detailed in Section 3, land-related policy reforms could enable States to:

- Achieve secure land tenure for food producers (Targets 1.4 and 2.3), especially for women (Target 5a);
- Support the adoption of sustainable agricultural practices (Target 2.4);
- Increase resilience to climate shocks (Target 1.5)
- Help farmers transition towards the use of fewer agrochemicals (Targets 3.9 and 12.4);
- Reduce inequalities (Target 10.1 and 5a)
- Realise inclusive land use planning and work towards healthy soils (Target 15.3);
- Build peace, rule of law and increased access to justice (Targets 16.3 and 16.7)
- Develop better knowledge systems (Targets 17.6.1 and 17.16.1).

For example, in order to realise SDG 2 on eliminating hunger, policies are needed to support agricultural systems that can deal with environmental stress, increase food production and prevent further land degradation (which relates to SDG 15). Because such systems will need to be less (agro) chemically intensive, they will also help to reduce deaths from chemical poisonings (relating to SDG 3).

To realise SDG 5, gender has to be mainstreamed in natural resources policies, and women's access to land and tenure security need to be greatly enhanced. Doing so will also create a positive feedback loop, in that it would help to reduce overall social and economic inequalities (SDG 10) and also contribute to improving food security and reducing poverty (SDG 1). In addition, although SDG 16 is not specifically related to soils and land, governments at all levels need to take measures towards inclusive decision-making for the management and use of land, as well as to ensure access to justice in case of land grabbing and reduce corruption in land deals.

Adopting measures that strengthen land governance, improve soils and achieve land degradation neutrality therefore has the potential to deliver multiple 'wins' for national policy makers.

Adopting measures that strengthen land governance, improve soils and achieve land degradation neutrality therefore has the potential to deliver multiple 'wins' for national policy makers. However, it could also be argued that the opposite holds true: that political resistance or foot-dragging over tenure reforms or sustainable land use could retard progress towards multiple SDG targets. It must be remembered that, in many countries, land is a highly political and politicised topic. While securing land rights is critical to achieving sustainable development, efforts to do so are limited by the entrenched interests of local powerful elites. This is compounded by the fact that improving land tenure governance and soil management systems is often a complex, long-term process that can take many years. As a result, many developing country governments (and indeed donors) have shied away from land tenure reforms within their development strategies.

Furthermore, elements of the SDGs relating to land may themselves face political obstacles. For example, policies that address wealth inequalities are likely to face resistance, particularly if the recipients of these forms of redistribution are viewed with suspicion or are politically marginalised. In terms of food security and sustainable agriculture, there is a strong push amongst leading multinational agribusiness firms to position their products and technologies at the forefront of policy makers' attention as the solution to solving hunger, conserving soil and protecting ecosystems. The resources available to these companies (and their political supporters) far outweigh those promoting agroecology and similar low/ zero external input farming systems, meaning that such strategies face an uphill battle to win support from policy makers. In order to "Leave No One Behind" securing political space and financial support for less powerful land users is imperative in this process.

Implications of land use-related SDGs for land users and farmers

The implementation of government policies designed to meet the SDGs could affect people with land-based livelihoods in a number of ways, and are likely to be experienced unevenly between and within regions and countries. These outcomes will depend on how various decisions create outcomes that have a bearing on other land use (and SDG) dynamics.

For example, if governments introduce and uphold strong, inclusive land tenure laws, land users (and especially women) will be able to invest in longer-term soil health and sustainable land use measures. This should help not only in terms of achieving LDN, but also to increase food security amongst small-scale farmers in emerging economies (again, particularly that of women). Conversely, if governments decide to convert farmland to biofuels or flood large areas for hydroelectric dams in order to achieve energy security and climate mitigation targets, traditional land users in those locations could face declining food security.

Another example concerns the use of agrochemicals. Governments could be persuaded by the view that various packages of high-yielding seed varieties and agrochemicals are needed to meet targets on food security and the protection of ecosystems (e.g. by growing more food intensively on less land). However, other countries could go in a different direction, where industrialised farming becomes more difficult to practice as policy measures are taken to cut the dependency on agrochemicals, and alternatives such as agroecology are actively supported.

Land users that have not taken care of the soil health will find it difficult to not take action and will invest in soil health (Target 15.3). Land users will be asked by governments to engage in new multi-stakeholder cooperation modes (Targets 17.6.1 and 17.16.1) in order to realise the land- and soil-related SDGs and at the same time, SDG 16 will make land use planning inclusive. Furthermore, realising the SDGs in a sustainable way in the long run, to a large extent, also depends on land users' knowledge and intrinsic motivation towards sustainable land use and soil health, and hence should benefit from partnerships involving the academic and research communities.

Implications of land use-related SDGs for the private sector

In order to achieve the SDGs, it is widely understood that “business as usual” will have to change⁷⁶. In a literal sense, this means that companies of all sizes will have to adjust their business models to become more sustainable. Because of the multiple ways in which the SDGs touch upon land issues, this is especially true of companies that operate in land-dependent sectors, such as agribusiness, forestry, energy, extractives, infrastructure and tourism firms.

In order to achieve the SDGs, it is widely understood that “business as usual” will have to change.

To this end, it is anticipated that policy disincentives for unsustainable land use (Targets 3.9 and 12.4) – in addition to opportunities or incentives to invest in sustainable land management and achieving LDN (Targets 2.4 and 15.3) – will aim to push the private sector towards sustainable land

use and soil health. At the same time, the private sector is expected to become more inclusive and transparent in its decision-making processes regarding natural resources management (Target 16.6). But the SDGs don't just represent a burden of additional regulatory obligations for companies. The World Business Council for Sustainable Development (WBCSD⁷⁷) has identified several opportunities for the private sector in relation to the SDGs:

- ‘Companies that align themselves with the SDGs, and that are able to communicate clearly about how their business helps governments to achieve their goals, will garner a strong ‘social license to operate’ and to differentiate themselves from competitors. Likewise, those that do not will be exposed to growing legal and reputational risks.
- Achieving the SDGs requires unprecedented public and private finance, which translates into new opportunities for business engagement and market penetration. Forward-thinking companies are in a unique position to seize these opportunities.
- The success of the SDGs will create thriving, inclusive economies around the world and provide better social, political and environmental stability across the globe, enabling businesses everywhere to flourish. In other words, we [the private sector] have an interest in achieving the

⁷⁶ World Business Council Sustainable Development: The SDGs, one year in: Where do we stand? <http://www.wbcsd.org/Overview/News-In-sights/Insights-from-the-President/The-SDGs-one-year-in-Where-do-we-stand> (accessed 06 June 2017).

⁷⁷ The World Business Council for Sustainable Development describes itself as a global, CEO-led, organisation comprises over 200 leading businesses working together to accelerate the transition to a sustainable world.

‘Companies that align themselves with the SDGs, and that are able to communicate clearly about how their business helps governments to achieve their goals, will garner a strong ‘social license to operate’

SDGs because business cannot succeed in societies that fail’⁷⁸.

However, as mentioned above, it should be acknowledged that not all companies are likely to welcome policy initiatives designed to drive greater sustainability of land and natural resources, and therefore resistance from certain private sector actors is highly probable. It will therefore be important for civil society groups, academics

and others (including progressive companies) to continue to push governments to implement land-related policies that support the SDGs and “Leave No One Behind”.

Implications of land use-related SDGs for civil society

The SDGs are a tremendous opportunity for civil society to advance agendas on secure land tenure and sustainable land use across the donor community, as well as within countries. While the various goals and sub-goals pertaining to land user rights do not form a comprehensive approach to the sector, they do offer a strong advocacy platform to address critical aspects of land governance and soil management.

Because “business as usual” will have to change and there will be resistance from certain private sector actors, civil society groups, academics and others (including progressive companies) will have to continue to push governments to implement land-related policies that support the SDGs and “Leave No One Behind”.

Civil society organisations (CSOs) should coordinate their efforts to provide the impetus for governments to craft context-appropriate land use and tenure rights strategies that harness their potential to deliver on the 2030 Agenda. In particular, CSOs can play the following roles in the implementation of the SDGs:

- Support land user communities, particularly marginalised groups and women, by:
 - » Raising awareness about the SDGs, and the linkages between these and human rights/ land user rights
 - » Amplifying their voices, and bringing their concerns to the attention of the policy makers.
 - » Delivering technical assistance to land users communities regarding implementation of sustainable soil management and land rights initiatives
- Ensure that governments are held accountable by:
 - » Engaging public authorities that have responsibility over land issues to highlight related SDG, targets and indicators, and set out positions on how progress towards these could be tracked by those agencies transparently and objectively.
 - » Identify specific national land governance and sustainable land management strategies, actions and policies that can help contribute to the 2030 Agenda, and advocate these to donors and governments.
 - » Engage voters through public communications campaigns, to raise awareness of land issues in the context of the SDGs, and highlight the responsibilities of elected public officials to deliver on their commitments.
 - » Call for public mechanisms (or set up parallel civil society mechanisms) that monitor the degree to which government officials and institutions comply with established standards, impose sanctions on officials who do not comply, and ensure that appropriate corrective action is taken when required⁷⁹.

⁷⁸ World Business Council Sustainable Development: (op. cit.).

⁷⁹ Office of the United Nations High Commissioner for Human Rights and Centre for Economic and Social Rights (OHCHR, CESR, 2013). ‘Who will be accountable? - Human Rights and the Post-2015 Development Agenda’ <http://www.ohchr.org/Documents/Publications/WhoWillBeAccountable.pdf> (accessed 6 June 2017).

- Locally monitor implementation of the SDGs, in conjunction with academic institutions, particularly concerning:
 - » The responsible governance of land tenure (Targets 2.3), and in particular trends in women's access to, and secure tenure over, land (Targets 5a. and 10.2);
 - » The promotion and expansion of sustainable agricultural practices (Target 15.3);
 - » The decreasing use of agrochemicals (Targets 3.9 and 12.4);
 - » The expansion of sustainable land use, land restoration and the reduction of land degradation (Target 15.3);
 - » The inclusion of local land users in decision-making processes regarding land use and land use planning (Targets 15.3, 16.6 and 16.7);
 - » The presence and functionality of local judicial and non-judicial redress mechanisms for those affected by land grabs (Targets 16.3 and 17.7).
- Engage private sector actors and seek to identify key 'champions' and 'blockers' of progress towards implementation of land-related aspects of the SDGs; with the aim of collaborating with the former group and seeking to neutralise the latter group

Implications of land use-related SDGs for academics

Academic institutions have a central role to play in ensuring land-related measures are successfully implemented. These roles fall into three categories: knowledge development, tracking and monitoring and advocacy.

Knowledge Development

In order to meet the daunting challenges embedded within the 2030 Agenda, the role of academics in refining and developing new knowledge on sustainable land and soil management will be vital. In particular, SDG 17, which concerns partnerships, is important for academics. Targets 17.6 and 17.16 should ensure financial funds for knowledge development on the implementation of the land use-related SDGs. The focus will be on multi-stakeholder cooperation for knowledge development. It is important that new knowledge for sustainable land management generated through academic research has effective channels for reaching other key stakeholders, including public officials but also including civil society and private sector actors.

Tracking and Monitoring Implementation

Academics also have an important role to play in monitoring the implementation of the SDGs, especially at the local level. Through academic research, reliable and independent data about sustainable land use management and soil health can be gathered; as well as analyses concerning sustainable agricultural practices, the use of agrochemicals, food insecurity, inequality, etc. Rigorous data is essential in order to track progress towards achieving the SDGs. Again, actively sharing findings with policy makers, land users, civil society and private sector actors can allow these stakeholders to adjust their policies and practices when needed in order to realise the SDGs.

Advocacy

Although academics often see their role as apolitical, it will at times be important for the research community to reach out directly to policy makers (or other constituencies) to highlight the urgency of a particular course of action in relation to land and soils. This is not unprecedented: one only has to think of recent interventions by leading scientists with regards to climate change; or of the medical community with regards to critical public health issues. While public trust in politicians, the media and other traditional voices of 'respected opinion' has slumped in many countries, there is still widespread public trust in the academic and scientific community, meaning that statements emanating from research bodies carry particular weight. At times, academics could and should even undertake joint advocacy with other civil society actors, particularly where these actors themselves carry particular expertise in a topic related to land and soils; and/ or have a strong public supporter base and advocacy infrastructure.

Critical Factors for Achieving the 2030 Agenda

As mentioned above, the realisation of the SDGs will rely largely on the extent to which the relevant targets are integrated into country-level policy initiatives, plans and budgets. This brings a number of challenges:

Global Instability

The greatest challenges to harnessing the SDGs for improved land governance and soil management arguably stem from current global political economy meta-trends: security risks/ conflicts, mass migration, economic instability, increasingly polarised and unequal societies, anti-globalisation sentiment, and the rise of populist movements.

The 2030 Agenda sets out highly ambitious targets to address complex environmental, economic and social problems, and hence, relies on concerted efforts by nations around the world to succeed. This requires sustained political leadership (at both global and national levels), as well as committed partnerships between various stakeholders. This is especially true in the case of land and soils, which often requires long-term solutions that can take years to implement. Yet in a world where many governments and populist movements are adopting an increasingly isolationist stance – and where domestic political resolve is being tested by economic uncertainties, security concerns, civil conflicts, migration, etc. – there is high risk that efforts to address sustainable land management and land tenure governance will remain fragmented, piecemeal and under-resourced.

Weak National Governance

The SDGs are likely to go unmet unless more attention is given to addressing governance challenges crucial to their implementation at the national level. Governance fundamentally underpins the ability to “get things done”, yet many countries are faced with weak governance in public sector entities, including endemic corruption, inadequate financial system controls, impunity for powerful elites, ineffective judicial systems, weak enforcement of environmental laws, etc. As noted previously, this is a particularly acute problem in the realm of land and soils, as land governance is, in many countries, beset with corruption and captured by entrenched interests⁸⁰.

Shrinking Civic Space

Compounding the above, the past decade has witnessed an unprecedented and contagious wave of measures by governments all around the world designed to curtail the ability for civil society (including journalists and even academics) to operate freely. These measures pose a threat to fundamental freedoms and human rights, and in some cases also lead to direct attacks on activists. The land sector has felt this particularly acutely, with rapidly rising threats to land rights defenders. According to Global Witness, more than four people were killed each week in 2016 by police, military private security or hired assassins⁸¹. In these situations, ‘partnerships’ between state and non-state actors to achieve reforms to land governance and sustainable soil management become almost impossible.

Finance

Financing remains a key obstacle to implementation. The 2030 Agenda requires a significant mobilisation of resources to succeed; the United Nations Conference on Trade and Development (UNCTAD) World Investment Report 2014 estimated that US\$5–7 trillion a year is needed to finance the SDGs. The Intergovernmental Committee of Experts on Sustainable Development Financing (ICESDF) calculated US\$80–90 trillion in untapped assets for investment and offered blended financing as a major vehicle for ‘crowding in’ corporate funds. Proponents argue that traditional aid is not growing fast enough but it can be used to encourage private investors to put their own money into projects that otherwise seem risky.

However, this approach remains controversial. Critics argue that public-private finance initiatives are often opaque and generally only attract corporate partners that can make a return on their invest-

⁸⁰ <https://www.weforum.org/agenda/2015/08/3-challenges-facing-the-uns-sustainable-development-goals/> World Economic Forum website (accessed July 12, 2017).

⁸¹ Global Witness (2017) Defenders of the Earth <https://www.globalwitness.org/en/campaigns/environmental-activists/defenders-earth/> (accessed 14 July 2017).

ments, skewing the policy agenda towards business interests. Furthermore, the evidence that blended finance actually works to pull private sector money into sustainable development initiatives is weak. One review published in November 2016 found that the limited data available on blended finance indicates that, even at high rates of growth, it would be almost impossible for it to plug the SDG funding gap – which is estimated to be as high as \$3.1tn (£2.49tn) annually by 2030. Furthermore, most of the money so far has supported investments in wealthier developing countries and places with lower poverty rates. Energy, construction and mining projects received much of this finance⁸². This suggests that, on a global level, there is still a considerable funding gap with regards to wider SDG implementation, including for land-based sustainability measures.

Managing Competing Interests

Forming effective partnerships between key groups of stakeholders, such as rural communities, civil society organisations, companies, public officials and academics, is widely recognised as a critical component to achieving the SDGs (as indicated by Goal 17 itself). However, forging lasting partnerships between diverse groups is easier said than done. For a start, who is considered a stakeholder? How are they identified, and by whom? What are the complimentary or potentially competing interests between these groups?

Such questions are often vital with regards to land interventions, as land may be occupied or used by farmers, pastoralists, fisherfolk, indigenous communities, recent settlers, transient workers, etc. Furthermore, the interests of ‘communities’ maybe stratified by age, gender, ethnicity, religion and social class. Similarly, when discussing the ‘private sector’, it is important to consider

what type of business is being brought into the process and understand their different interests; e.g. between multinational corporations, national companies, local entrepreneurs, social enterprises or co-operatives. Then there is the question of how to convene these various interest groups, as not all will feel comfortable with, or be able to meet in, the same sorts of venues.

There is a need for a “new paradigm of accountability” to spur people-centred, planet-sensitive development and to fulfil the 2030 Agenda pledge to “Leave No One Behind.”

It should also be recognised that the SDGs will sometimes involve trade-offs between interest groups. This may involve difficult political choices that create “winners” and “losers”, at least in the short term. Again, this is particularly relevant to land, as land use decisions tend to favour one set of interests over another. For example, biodiversity could be threatened if forests are cut down to expand agricultural production for food security. Conversely, food security could be threatened if land is switched from food production to growing biofuels for energy security, or to build hydropower facilities for greenhouse gas mitigation⁸³.

Tracking Progress

Another important issue will be the monitoring standards used to track progress towards meeting the SDGs. A robust, transparent and participatory accountability mechanism is necessary for people to monitor progress and hold their governments accountable for implementing the SDGs. As highlighted by the UN Secretary-General in his 2014 Synthesis Report, there is a need for a “new paradigm of accountability” to spur people-centred, planet-sensitive development and to fulfil the 2030 Agenda pledge to “Leave No One Behind.”

The UN Statistical Commission agreed a first set of 230 indicators to track progress in March 2016. But a third of these were classified as ‘Tier 3’ – meaning they still needed to be developed. Data are lacking for many other indicators (including around land rights). In some cases these gaps are spatial (i.e. no data at national level), in others temporal (i.e. missing data for certain years), and in others lack disaggregation by sub-populations of interest, such as women, or racial, ethnic and religious minority groups.

⁸² The Guardian (accessed July 12, 2017) <https://www.theguardian.com/global-development/2016/nov/17/little-evidence-public-private-finance-can-plug-development-funding-gap>.

⁸³ <https://www.weforum.org/agenda/2015/08/3-challenges-facing-the-uns-sustainable-development-goals/> World Economic Forum website (accessed July 12, 2017).

Fortunately, opportunities to develop new ways of tracking both environmental and socio-economic trends are emerging due to the pooling of multiple data sources and improving technologies. For example, instead of collecting data on land clearance or desertification at a local level, officials can now obtain sophisticated geospatial data from an analysis of satellite imagery at national, regional or even global levels. Information technology is also making economic and social data available more quickly⁸⁴. Regular dialogue and engagement with stakeholders can also be an integral part of data gathering processes.

Nonetheless, the lack of agreed standards for measuring progress towards a large number of indicators is an ongoing concern. In the absence of a robust accountability instrument, the risk of dilution and selectivity in the process of measuring and reporting on progress remains high⁸⁵.

⁸⁴ <http://www.sustainablegoals.org.uk/new-ways-to-measure-the-goals/> (accessed July 12, 2017).

⁸⁵ <http://www.tandfonline.com/doi/abs/10.1080/13552074.2016.1142229?journalCode=cgde20> (accessed July 12, 2017).

5. Conclusions

This document captures the SDG goals, targets and indicators that are relevant for the responsible governance of land, the sustainable management and use of land, as well as the health of soils. It also highlights that actions taken to improve land governance, increase soil health and achieve land degradation neutrality can make a significant contribution to multiple SDGs, and ultimately to achieving the 2030 Agenda. In particular, it highlights linkages between sustainable land use and:

- Target 1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property.
- Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.
- Target 2.3: By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land.
- Target 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.
- Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.
- Target 5a: 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, in accordance with national laws.
- Target 10. 1: By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average.
- Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle.
- Target 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.
- Target 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.
- Target 15.a: Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.
- Target 16.3: Promote the rule of law at the national and international levels and ensure equal access to justice for all.
- Target 16.7: Ensure responsive, participatory and representative decision-making at all levels.

- Target 17.6: Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms.
- Target 17.16: Enhance the Global Partnership for Sustainable Development.

The SDGs provide targeted commitments and a new language that can be used by all actors, from policy makers and citizens to academics, civil society and the private sector, to discuss progress towards sustainable development, and to align their aims with the 2030 Agenda.

While the 2030 Agenda itself provides a globally ambitious framework, responsibility for driving the SDGs forward rests first and foremost in the hands of national governments, as progress towards realising the goals is largely dependent on individual member states' actions. Changes in national policies and local development plans will thus be crucial for creating appropriate incentives for strong land governance, inclusive participatory land use planning and judicious use of land and soil restoration.

This presents both challenges and opportunities. Most governments within democratic societies are relatively short-lived, and the time horizons of policy makers are often limited to the next elections. This runs counter to the medium-to-long term thinking and action that is often needed to improve land rights laws and achieve more sustainable land use.

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In many nations, the land sector is characterised by weak governance, political patronage, corruption, impunity for powerful elites, ineffective judicial systems and weak enforcement of existing laws and policies, like ILO convention 169 for indigenous and tribal people, the United Nations Guiding Principles on Business and Human Rights (UNGPs), the UN Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGTs). In many cases, state security apparatus is an active part of the problem, engaging in forcible evictions of communities and playing a role in violence perpetrated against land rights defenders.

Meanwhile, trade partner countries and donors, fearful of harming trade and investment relations or treading on domestic sensitivities, have often shied away from engaging in land rights issues while they have responsibilities to act as agreed in OECD guidelines for multinational enterprises, the UNGPs, the VGGTs. Facing and addressing these governance issues by governments, trade partner countries and donors, will be crucial not only for addressing land rights violations and land degradation, but also for achieving the many SDG targets with strong land components.

Internal governance failings are not the only obstacle to navigating a path towards land governance in the context of the SDGs. The world is currently facing major upheavals stemming from conflict, mass migration, the threat of terrorism, climate change and economic stagnation. In some cases these have given rise to new populist movements and regimes seeking to withdraw from international policy spaces and cooperative actions. This presents a major threat to a 'globalist' UN initiative such as the 2030 Agenda.

There is also currently a major question mark as to where the money to deliver the necessary changes – known as the 'means of implementation' – will come from. While many donors and the World Bank are keen on so call 'blended' solutions involving public funds to mobilise private finance, there is limited evidence that this approach will generate sufficient funds to meet the scale of the challenge, or that it can be successful in cases where the interventions do not present clear opportunities for private companies to generate returns on their investments.

Then there is the question of how to manage trade-offs and balance the needs of competing interest groups. This is particularly significant in the context of land, as competing pressures on land for

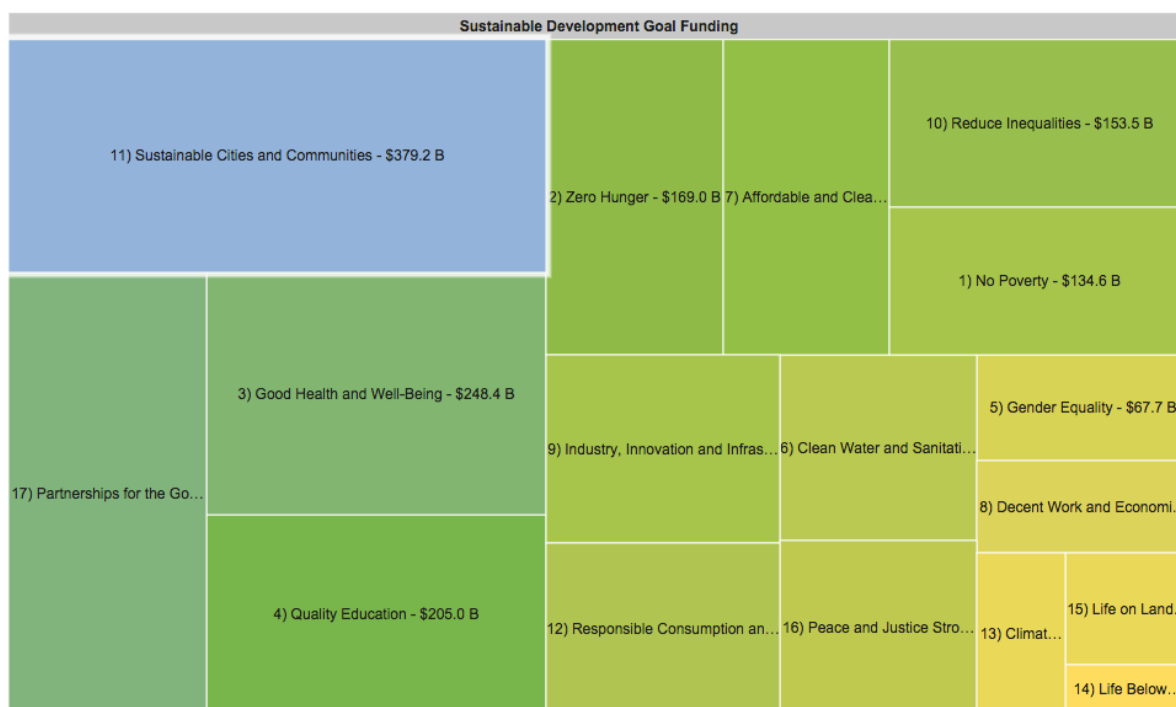
food, grazing, biofuels, fodder, fibre, forests, property development, infrastructure, hydropower energy, extractive industries which are caused by both domestic demographic and consumptive change and international trade and investments. This means that decisions on how to prioritise certain SDG targets will lead to the creation of 'winners' and 'losers', at least in the short term. Difficulties in managing these trade-offs could encourage government inertia.

Even where action by policy makers is taken, there are difficulties in assessing where progress is being made on many issues, as the indicators that have been developed to track them lack defined methodologies or readily available data sources. For example, little data currently exists on the proportion of the adult population with secure rights to land. Despite some scattered initiatives, tenure security has never been systematically monitored or measured across nations. Yet this is critical for policy makers to understand, especially given the strong link between securing land (use) rights and various SDG targets.

Nonetheless, there is hope that progressive reforms to land governance and land and soil management can be achieved. The fact that the SDGs embrace complexity means that policy makers can see the linkages between action in one area, and impacts on other targets. This provides a strong framework for governments to enact land-related measures that can achieve multiple objectives in helping countries to meet their 2030 Agenda commitments. These linkages will become increasingly difficult for policy makers to ignore, as they also tie into other international frameworks concerning the responsible governance of tenure, indigenous peoples' rights, women's rights, climate change and land degradation and desertification.

Furthermore, it is important to recall that the SDGs were constructed by States as a collective effort, and thus reflect their own priorities. Although the goals are broad and complex, they have also helped to provide a clearer sense of what 'development' is across nations, and to approach the goals as a joint challenge. Governments are also committed to framing future development financing through the SDGs, and funding efforts are being made transparent and open to public scrutiny (see Figure 5 below).

Figure 5: Funding for the SDGs by global goal (\$USD)



Source: AidData <http://aiddata.org/sdg> (accessed July 13, 2017).

In terms of data, new geospatial technologies and forms of participatory data collection and sharing will be an important part of efforts to fill these data gaps. Furthermore, a high level working group recently agreed on a set of household survey questions to be included within national-level surveys and censuses to measure how secure peoples' land rights are. This agreement will help custodian agencies of this indicator make the argument this October 2017 at the Inter-Agency Expert Group meeting on the SDGs that Indicator 1.4.2 deserves to be reclassified from Tier 3 status, where it is in danger of being dropped from the SDG agenda, to a safer Tier 2 status that would allow countries to start the global investments in the data collection of monitoring security of tenure.

But perhaps the greatest cause for hope lies in the multiple stakeholders with an interest in advocating, implementing and tracking land issues related to the SDGs. While accountability for the SDGs primarily lies between governments and their citizens, the 2030 Agenda involves a shared commitment between various actors in the implementation and monitoring progress of the SDGs. These include land users themselves, civil society organisations, the private sector, academics, as well as the UN system.

In terms of data, new geospatial technologies and forms of participatory data collection and sharing will be an important part of efforts to fill these data gaps.

The 2030 Agenda gives the High-level Political Forum on Sustainable Development (HLPF) a central role in overseeing a network of follow-up and review processes at the global level, and provides it with a "platform for partnerships".

Multiple actors from within these various communities are increasingly framing their work within the context of the SDGs. It is essential that

these actors forge effective partnerships to push for better land governance and sustainable land and soil management to be at the core of the 2030 Agenda. They should also work together to break down the considerable obstacles to sustainable land governance and use, and communicate the importance of land-related policies and actions in yielding progress towards the Sustainable Development Goals.

Grounding Sustainability: land, soils and the Sustainable Development Goals

This is a policy analysis undertaken by Both ENDS as part of the iSQAPER project (Interactive Soil Quality assessment in Europe and China for Agricultural productivity and Environmental Resilience (iSQAPER), which is funded by the European Union's Horizon 2020 Framework Programmes for Research and Innovation.

This paper seeks to offer an analysis of the linkages of the Sustainable Development Goals (SDGs) with land use (decisions) and soil health and to provide insights on and recommendations for the opportunities of the SDGs to enhance soil and land management and restoration.

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