Integrating soil into NDC updates and ambition raising

Liesl Wiese
International Consultant: Agricultural Science and Policy
Liesl.wiese76@gmail.com
LinkedIn profile

1. Why soil and SOC?

2. NDC purpose and requirements

3. Integrating SOC into NDCs (Past)

4. Links to other agendas

5. Integrating SOC into NDCs (Future)

6. Concluding remarks

1. Why soil and SOC?

Global agricultural SOC mitigation potential:

- 2-5 GtCO2e per year

Fuss et al. 2018
Smith et al. 2019

FAO, 2019

2. NDC purpose and requirements

Nationally Determined Contributions (NDCs)

NDC Registry

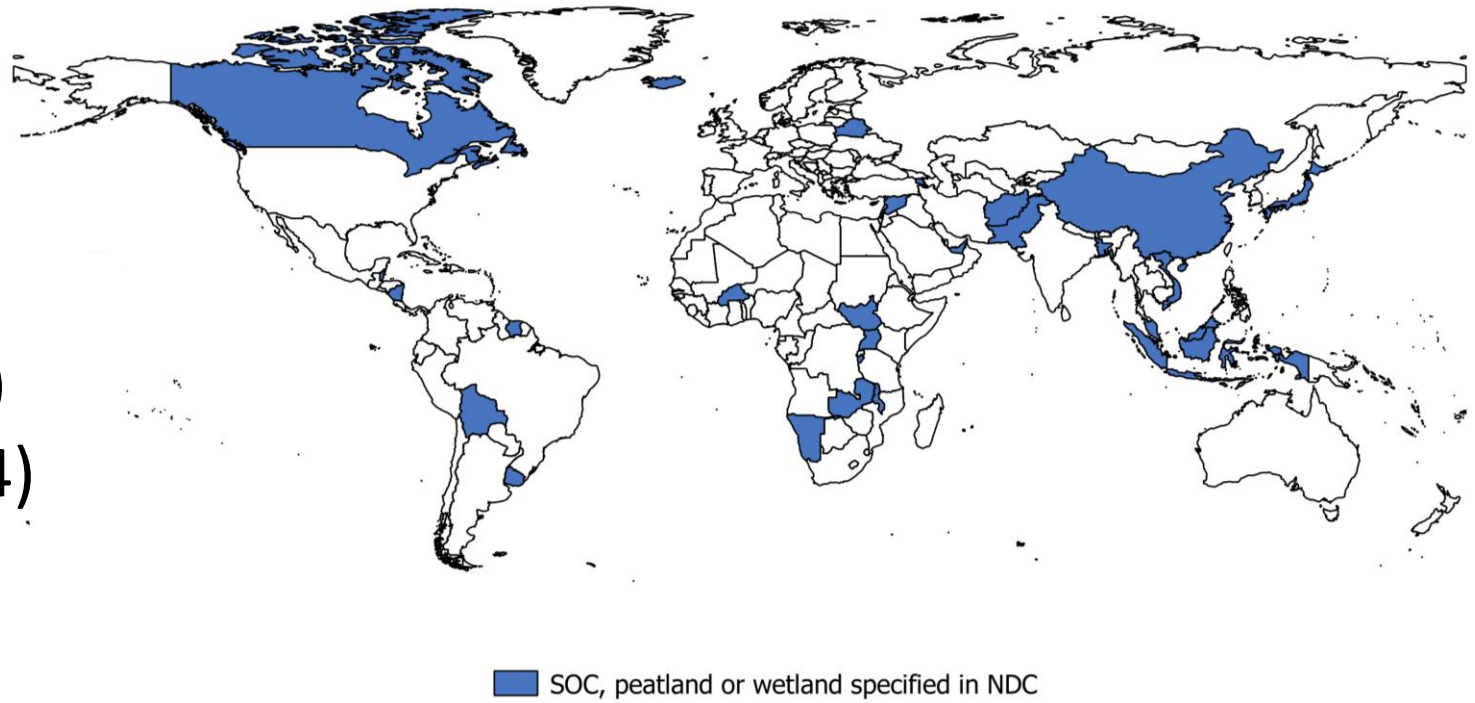
- Voluntary, ambitious GHG mitigation commitments, priority adaptation actions
- **I**nformation for **c**larity, **t**ransparency and **u**nderstanding (ICTU)
- 5-yearly updates – increase ambition
- Developed vs developing countries

NDCs are diverse !

3. Integrating SOC into NDCs (Past)

28 NDCs refer to: SOC (14)
Peatlands (6)
Wetlands (14)

(Out of 184 NDCs)



In relation to:

1. Quantified or unquantified targets
2. Mitigation co-benefits
3. National policies/ plans

Some countries have SOC related policies not reflected in NDCs
Brazil, EU, USA

Wiese-Rozanova et al. 2020

Expert interviews: Brazil, Burkina Faso, Canada, China, EU, Indonesia, Japan, USA

Quantified target (Uruguay)

Section I
Climate change mitigation objectives

GHG	Carbon pools/ Land use categories	2025 Mitigation Objectives	
		Conservation of stocks	
		Unconditional	Conditional on additional specific means of implementation
CO_2	Soil Organic Carbon (SOC) in Grasslands, Peatlands and Croplands	Avoid CO_2 emissions from SOC in 10% of the grasslands area (1.000.000 ha)	Avoid CO_2 emissions from SOC in 30% of the grasslands area (3.000.000 ha)
		Avoid CO_2 emissions from SOC in 50% of the peatlands area of year 2016 (4.183 ha)	Avoid CO_2 emissions from SOC in 100% of the peatlands area of year 2016 (8.366 ha)
		Avoid CO_2 emissions from SOC in 75% of the cropland area under Plans of Soil Use and Management of year 2016 (1.147.000 ha), as well as CO_2 sequestration in the remaining 25% of the area (383.000 ha)	---

Unquantified target (China)

- To lower carbon dioxide emissions per unit of GDP by 60% to 65% from the 2005 level;

II. POLICIES AND MEASURES TO IMPLEMENT ENHANCED ACTIONS ON CLIMATE CHANGE

F. Increasing Carbon Sinks

- To vigorously enhance afforestation, promoting voluntary tree planting by all citizens, continuing the implementation of key ecological programs, including protecting natural forests, restoring forest and grassland from farmland, conducting sandification control for areas in vicinity of Beijing and Tianjin, planting shelter belt, controlling rocky desertification, conserving water and soil, strengthening forest tending and management and increasing the forest carbon sink;
- To strengthen forest disaster prevention and forest resource protection and to reduce deforestation-related emissions;
- To strengthen the protection and restoration of wetlands and to increase carbon storage capacity of wetlands; and
- To continue to restore grassland from grazing land, to promote mechanism of maintaining the balance between grass stock and livestock, to prevent grassland degradation, to restore vegetation of grassland, to enhance grassland disaster prevention and farmland protection and to improve carbon storage of soil.

Mitigation co-benefit from adaptation (Burkina Faso)

Table 12. Investment and implementation costs of conditional projects within the INDC (in US$)

Sectors	Investment costs of the sectoral projects	Implementation costs	Co-benefits associated with implementation of the sectoral projects
Agriculture & water	1,233,470,000	493,388,000	> Annual growth in agricultural production, more specifically the amounts of cereals produced, leading in turn to an improvement in the levels of food security and the levels of farmer income, which reduces the incidence of poverty. > The proposed actions make it possible to sequester carbon in the soil (more than 5,150 Gg eq CO2 sequestered at the 2030 horizon), contributing to the restoration of degraded land and mitigation of the effects of climate warming, with the end result of preserving ecosystems and water resources.
Animal husbandry	562,080,189	224,832,076	> The use of biodigesters makes it possible to produce compost for the fertilisation of agricultural land (things which increase agropastoral production and the income of the producers). This provides energy to rural households, contributing to an increase in their standard of living. > The use of biodigesters contributes to saving biomass energy because the stocks of wood used for the energy needed for cooking and lighting are saved. > Development of grazing areas will preserve biodiversity and the mobilisation of surface water, which up to now has been better developed in intensive animal production zones (IAPZ's).

Specification of SLM measures/ practices in NDCs

Measure/s	Countries
Agroforestry/Silvo-pastoralism*	Malawi, Palestine
Conservation agriculture	Zambia
Grassland/ Pasture land management	China, Japan, Uruguay
Organic amendments (**manure**, compost, biochar)	Malawi
Reduced/stopped (crop residue) burning	
Erosion control	
Integrated soil fertility management	
*Reduced or **no-tillage***	Uruguay
Residue retention (mulching)	Malawi, Uruguay
Cover crops	Uruguay
Fallow	

Malawi:

2.7 Agriculture

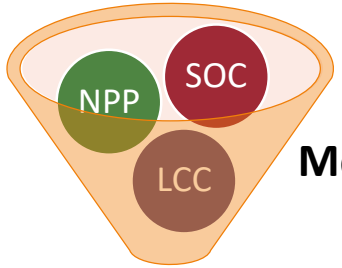
The mitigation options for agriculture are:

- […]
- promoting agroforestry systems in targeted locations as source of biomass and soil carbon sequestration;
- encouraging the application of organic amendments such as manure and crop residues that contain the potential to contribute to soil carbon levels

Specification of SLM measures/ practices in NDCs

Measure/s	Countries	Mitigation	Adaptation
Agroforestry/Silvo-pastoralism*	Malawi, Palestine	31	36
Conservation agriculture	Zambia	21	13
Grassland/ Pasture land management	China, Japan, Uruguay	14	16
Organic amendments (**manure**, compost, biochar)	Malawi	12	10
Reduced/stopped (crop residue) burning		12	6
Erosion control		9	41
Integrated soil fertility management		6	13
*Reduced or **no-tillage***	Uruguay	5	6
Residue retention (mulching)	Malawi, Uruguay	3	3
Cover crops	Uruguay	2	1
Fallow		1	1

4. Links to other agendas



Metrics

Indicator 15.3.1

Malawi NDC (June 2017):

2.7 Agriculture

The mitigation options for agriculture are:

- […]
- promoting agroforestry systems in targeted locations as source of biomass and soil carbon sequestration;
- encouraging the application of organic amendments such as manure and crop residues that contain the potential to contribute to soil carbon levels

- The mitigation measures suggested in the agricultural sector will contribute […] around 400 Gg CO2 equivalent per annum from implementing climate smart agriculture extensively by **2040,** conditional upon support.

Malawi LDN (February 2018):

Specific targets for avoiding, minimizing and reversing land degradation

- Improve SOC stocks on cropland to 55 ton/ha by **2025** compared to 44.7 ton/ha estimated in 2015
- Improve productivity of 754,320 hectares cropland by **2030**

5. Integrating SOC into NDCs (Future)

Examples to integrate SOC in second 5-year NDC cycle:

1. Increase NDC ambition by:

- Quantifying the contribution of long-term national actions to SOC
- Quantifying mitigation co-benefits of adaptation actions

2. Increase transparency for global SOC accounting

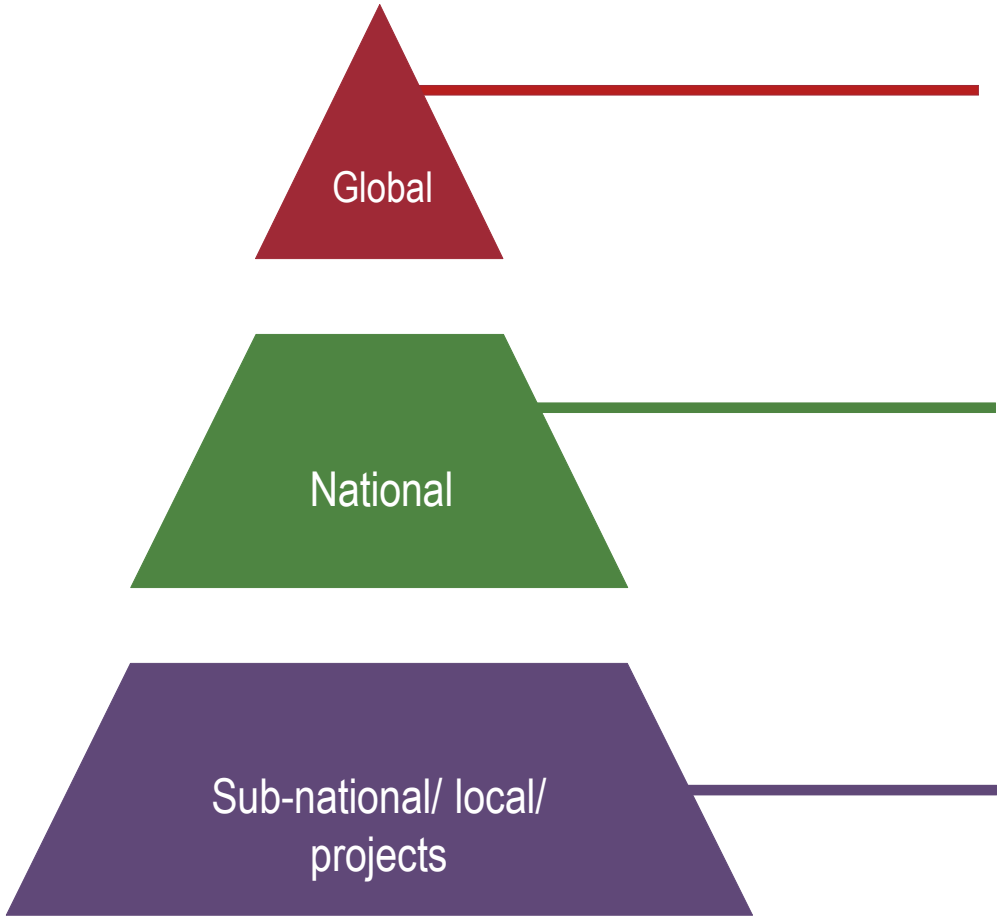
- Provide sectoral or sub-sectoral targets in addition to economy-wide targets

3. Leverage support for national policies, technical capacity, climate finance

NDCs as indicator of policy action on soil health and climate

- Specifying SOC in relation to SOC-supporting measures already included in NDCs
- Setting conditional SOC mitigation targets for developing countries

Challenges associated with SOC/NDC integration

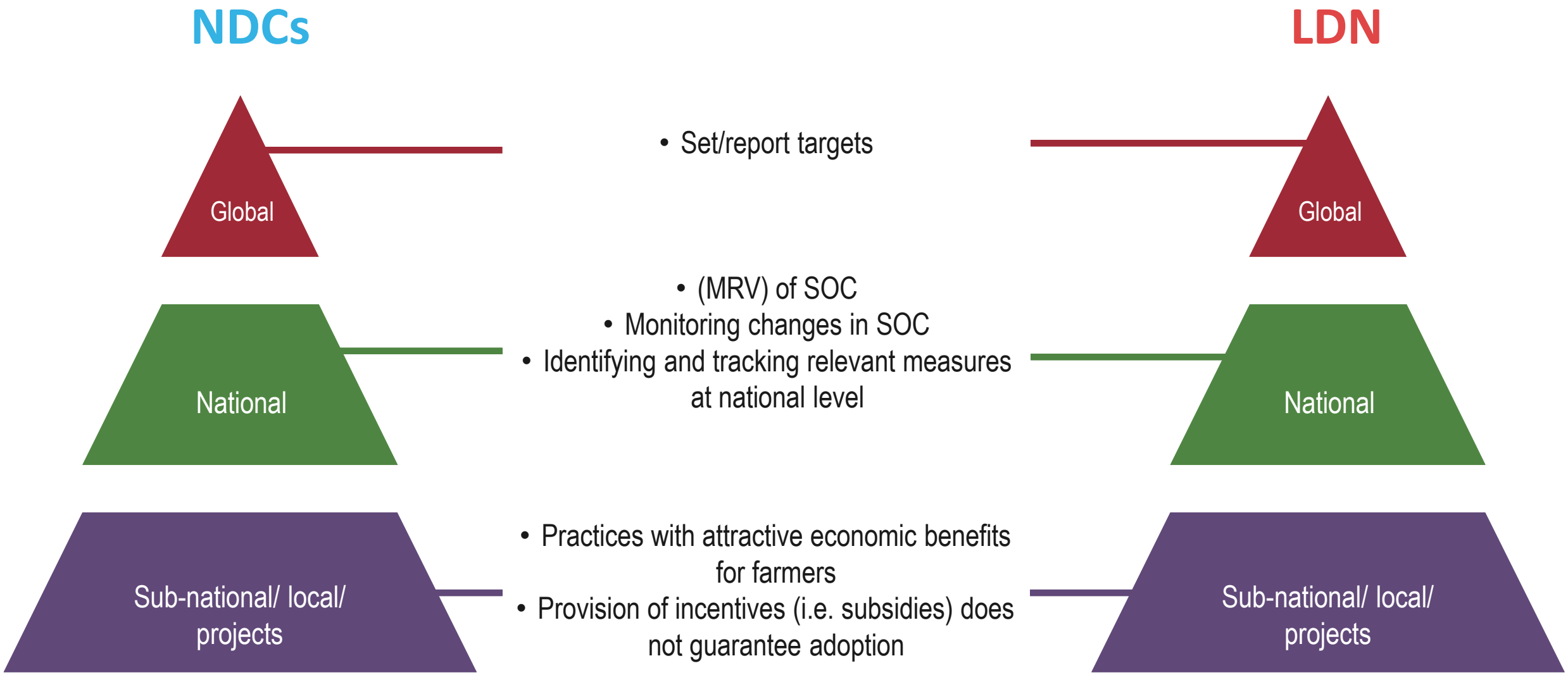


- Set/report on ambitious NDC targets with ICTU

- Measurement, reporting and verification (MRV) of SOC: accuracy, affordability and data availability
- Ensuring GHG inventories can accommodate data and indicators
- Monitoring changes in SOC over time and link to management practices
- Identifying and tracking relevant measures at national level

- Considering relevant practices with attractive economic benefits for farmers
- Provision of incentives (i.e. subsidies) does not guarantee adoption

Challenges associated with SOC/NDC integration



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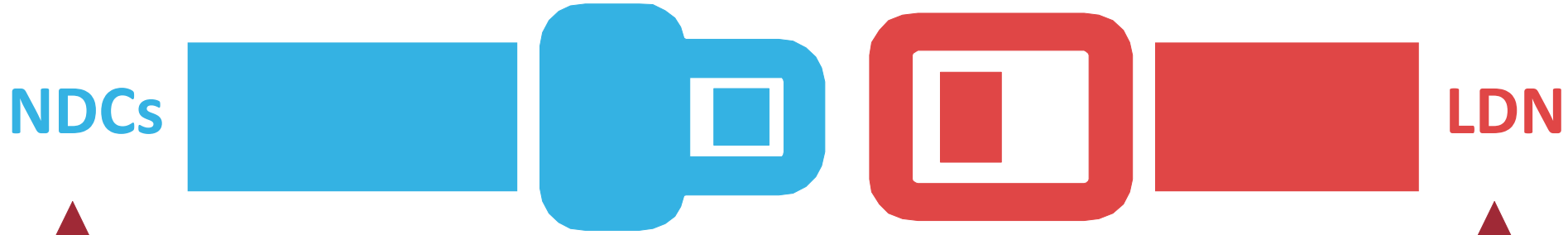

Global

- Set/report targets

Global

National

- (MRV) of SOC
- Monitoring changes in SOC
- Identifying and tracking relevant measures at national level

National

Sub-national/ local/ projects

- Practices with attractive economic benefits for farmers
- Provision of incentives (i.e. subsidies) does not guarantee adoption

Sub-national/ local/ projects

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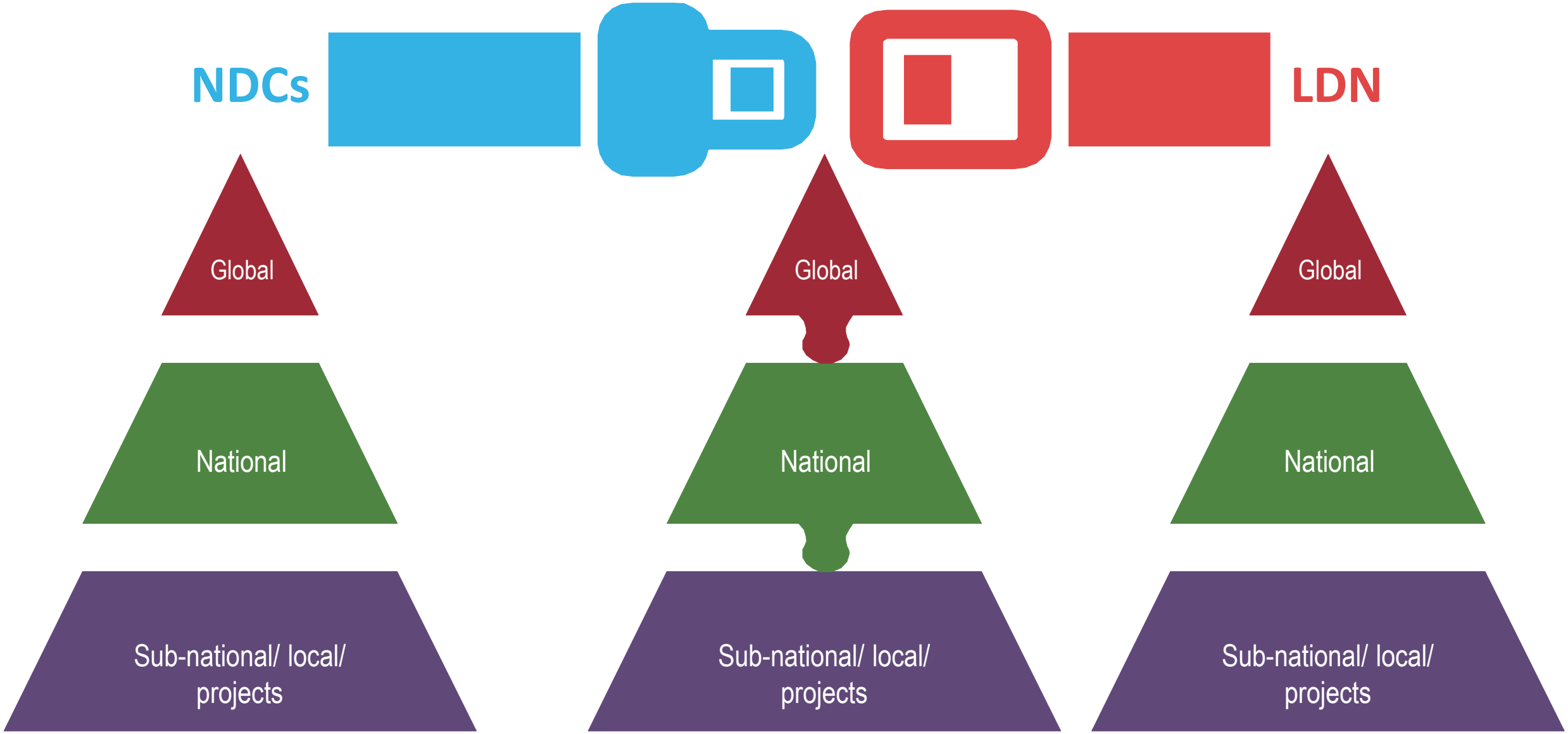

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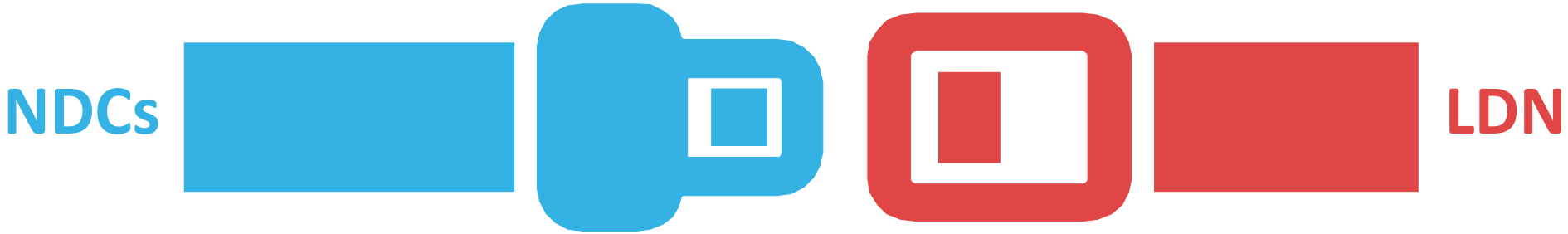

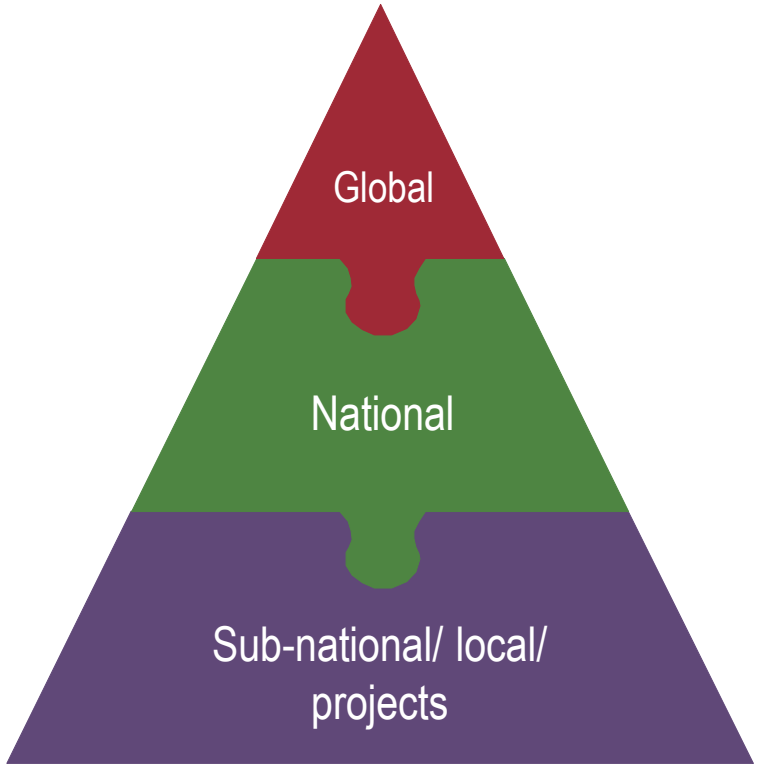

6. Concluding remarks

- Prerogative: to address SOC/soil health in NDCs lies with countries
- Interpretation: Absence of SOC in NDCs does not mean SOC/soil health is not being addressed in a country (policies, activities, etc.)
- Recognition: Countries face multiple challenges to include SOC in NDCs
- Opportunity: for developing countries to leverage support through SOC in NDCs (including 4 per 1000, GIZ, CoP, and others)
- Critical: Recognize and capitalize on links between NDCs and other global agendas to optimize national systems/processes
- Priority: Improve vertical integration in national systems/processes