

2015
TIME FOR
GLOBAL ACTION
FOR PEOPLE AND PLANET



United Nations Environment Programme
environment for development

Sustainable Development Goals Interface Ontology

Mark Jensen

UB Ontology Meeting 4/25/2016

Sustainable Development Goals



Sustainable Development Goals

17 thematic objectives (aspirations) for global development

- End poverty in all its forms everywhere
- End hunger, achieve food security and improved nutrition and promote sustainable agriculture

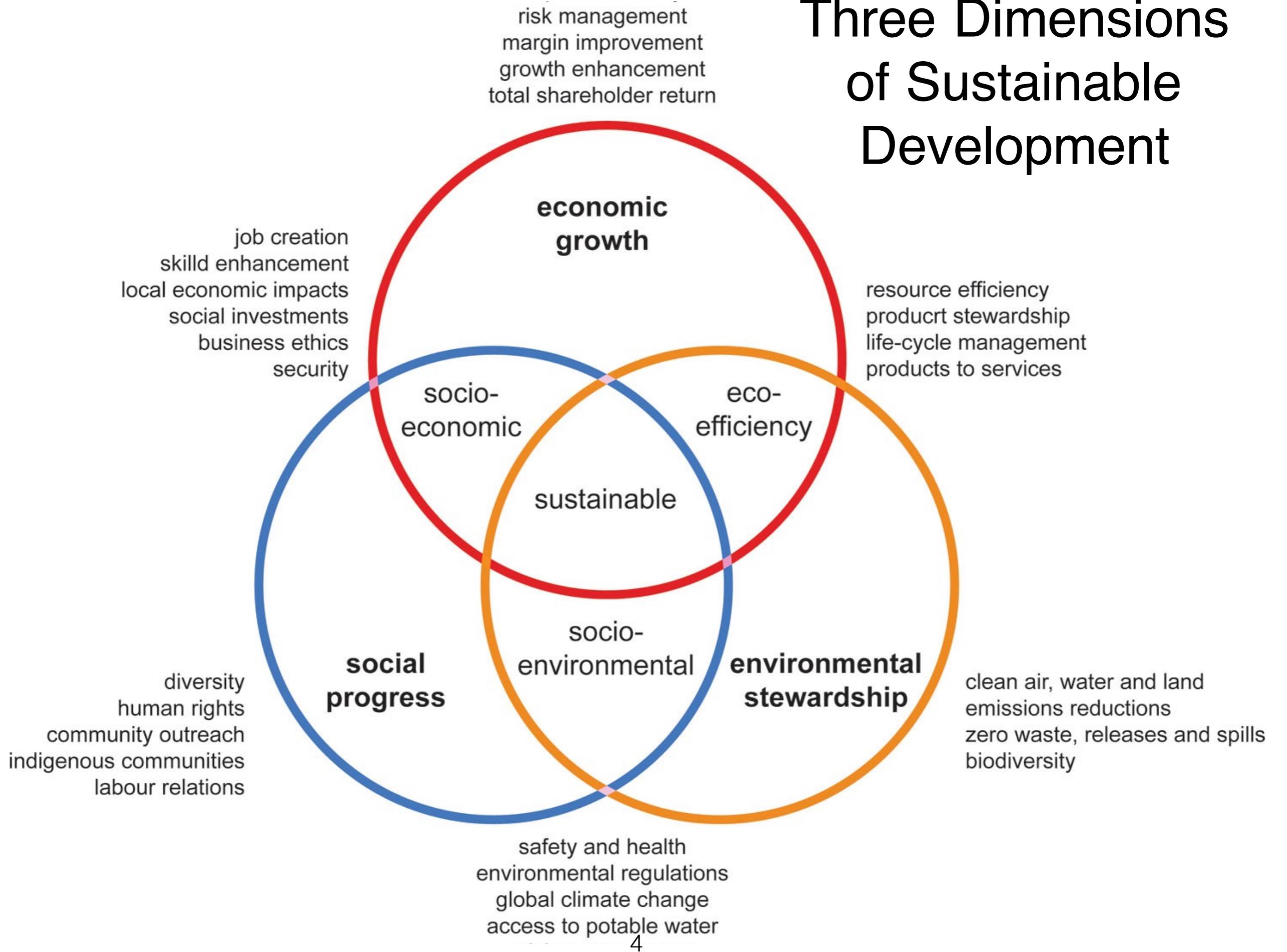
Successors of Millennial Development Goals (MDG)

United Nations Environment Assembly met in June 2014

post-2015 Development Agenda

Addressing the three dimension of sustainable development

Three Dimensions of Sustainable Development



Sustainable Development Goals

Goals and targets reflect complexity and challenges of sustainable development processes

- universality
- integration
- scientific legitimacy
- transformative approach

Monitoring via indicators (ideally multipurpose)

- Percentage of eligible population covered by national social protection programs

Lessons from MDGs

Indicators must be SMART—

- avoid duplication, consistent with existing standards, allow international comparison, and be universally applicable
- meaningful, scientifically credible, consistent over time
- sensitive to root causes, drivers and underlying phenomena.
- intelligible to both negotiators and technical experts



Proposed Multipurpose Indicators to support the Post-2015 Development Agenda



FAO: FRA 2000 on definitions of forest

Land with tree crown cover (or equivalent stocking level) of more than 10 percent and area of more than 0.5 hectares (ha).

The trees should be able to reach a minimum height of 5 meters (m) at maturity *in situ*.

May consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground; or open forest formations with a continuous vegetation cover in which tree crown cover exceeds 10 percent.

Young natural stands and all plantations established for forestry purposes which have yet to reach a crown density of 10 percent or tree height of 5 m are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention or natural causes but which are expected to revert to forest.

CC Snežana Trifunović



Proposed Multipurpose Indicators to support the Post-2015 Development Agenda



FAO: FRA 2000 on definitions of forest

Includes: forest nurseries and seed orchards that constitute an integral part of the forest; forest roads, cleared tracts, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific scientific, historical, cultural or spiritual interest; windbreaks and shelterbelts of trees with an area of more than 0.5 ha and width of more than 20 m; plantations primarily used for forestry purposes, including rubberwood plantations and cork oak stands.

Excludes: Land predominantly used for agricultural practices.

CC Snežana Trifunović



Proposed Multipurpose Indicators to support the Post-2015 Development Agenda



Critical need for new definitions of “forest” and “forest degradation” in global climate change agreements

Nophea Sasaki^{1,2} & Francis E. Putz³

¹ Harvard Forest, Harvard University, Petersham, MA 01366, USA

² Graduate School of Applied Informatics, University of Hyogo, Kobe, Japan

³ Department of Biology, University of Florida, Gainesville, FL 32611, USA

To ensure that biologically rich natural forests are not severely degraded in ways that remain unrecognized, in addition to differentiating natural forests and plantations, the new and improved definitions of “forest” and “forest degradation” should set the minimum crown cover at 40% and the minimum height for a “tree” at 5 m. These changes will help reduce greenhouse gas emissions from what is now termed forest “degradation” without increasing monitoring costs.

SDGIO

Pier Luigi Buttigieg

Jacqueline McGlade



Barry Smith, Christopher Mungall,
Ramona Walls, Lynn Schriml

SDGIO

An OBO-compliant ontology to represent the phenomena surrounding the SDGs, their targets and indicators

- Tagging documents and data (metadata)
- Discovery and visualization
- Semantically rich, addressing key insights from MDG process
- Addressing ambiguity
- OWL, Protege, BFO, Github, OntoDev, Robot
- <https://github.com/SDG-InterfaceOntology/sdgio>

Imports in SDGIO

Domain	Ontology	Citation or URI
Chemical entities of biological interest	CHEBI	(Degtyarenko <i>et al.</i> , 2008)
Human disease	DOID	http://purl.obolibrary.org/obo/doid.owl
Environments and ecosystems	ENVO	(Buttigieg <i>et al.</i> , 2013)
Phenotypic qualities	PATO	http://purl.obolibrary.org/obo/pato.owl
Populations and communities	PCO	(Walls <i>et al.</i> , 2014)
Cross-species anatomy	UBERON	(Mungall <i>et al.</i> , 2012)

SDGIO

Intended to be relatively small with a substantial import structure

Placeholders for classes that don't exist yet in domain ontologies

- Legal, Rights, Permissions
- Social, Policy, Administrative, Services
- Financial
- Health and Safety

Creating SDG-specific classes via utilization of imports

SDGIO ‘neglected tropical disease’



SDGIO ‘neglected tropical disease’



GOAL 6

Ensure availability and sustainable management of water and sanitation for all



Targets

1. By 2030, achieve universal and equitable access to safe and affordable drinking water for all
2. By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
3. By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
4. By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
5. By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
6. By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
 - A. By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
 - B. Support and strengthen the participation of local communities in improving water and sanitation management



Proposed Multipurpose Indicators to support the Post-2015 Development Agenda



Target 6.1

By 2030, achieve universal and equitable access to safe and affordable drinking water for all

Indicator 6.1.1

Percentage of population using safely managed drinking water services

Indicator 6.1.2

Average weekly time spent in water collection (including waiting time at public supply points), by sex, age, location and income



Proposed Multipurpose Indicators to support the Post-2015 Development Agenda



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

Target 3.1

By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births

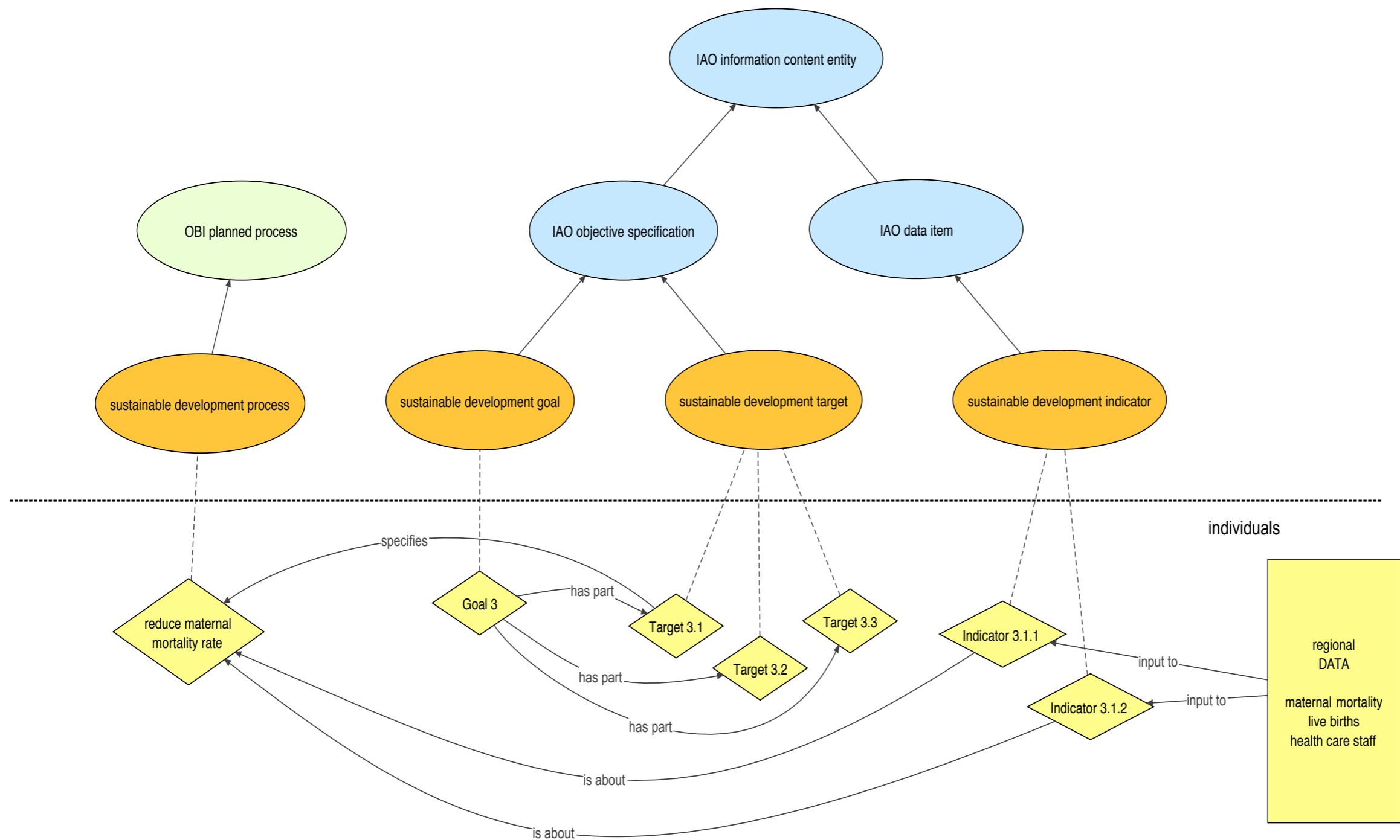
Indicator 3.1.1

Maternal mortality ratio

Indicator 3.1.2

Proportion of births attended by skilled health personnel

Goals, Targets, Indicators



Goals, Targets, Indicators

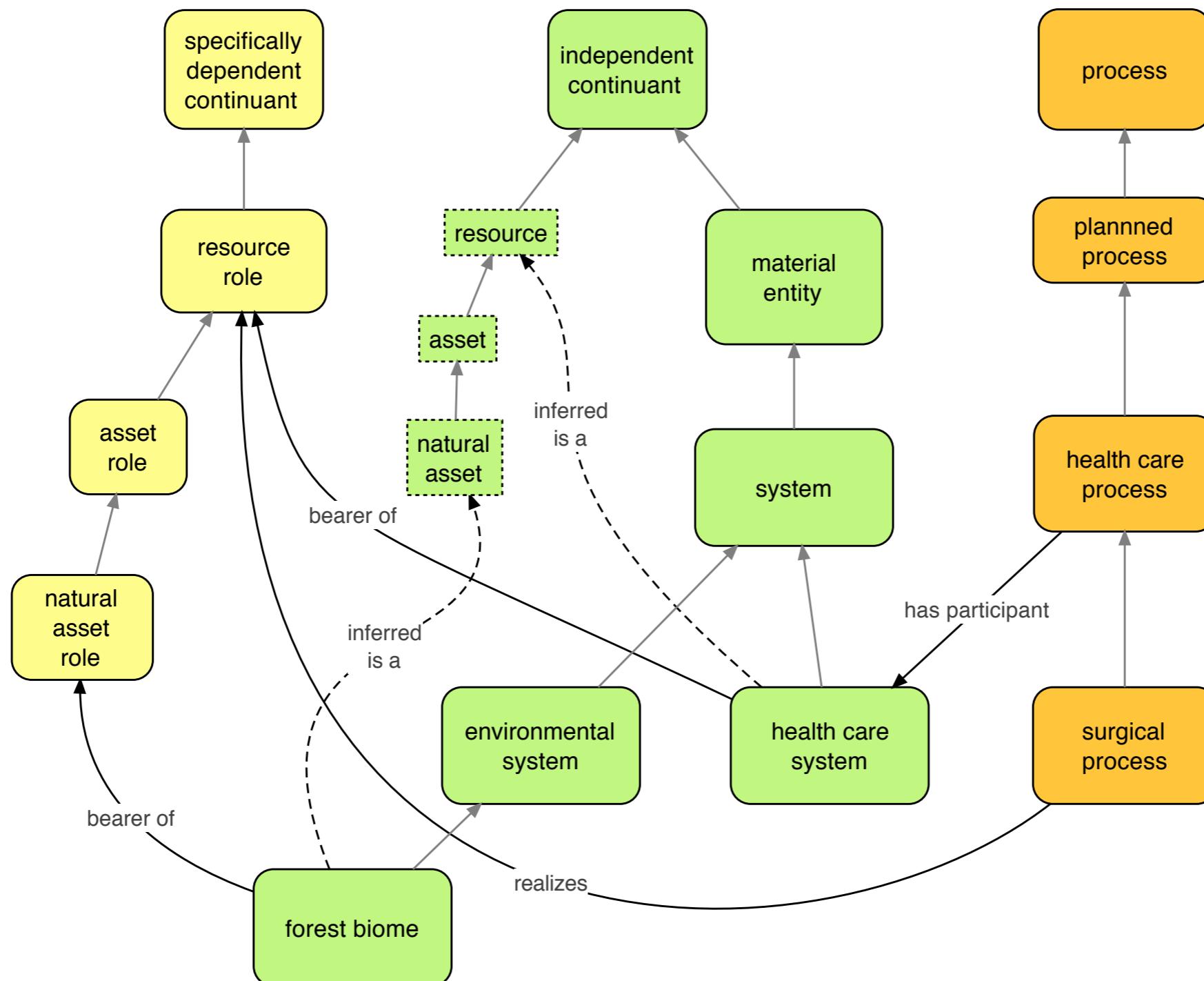
sustainable development target specification =

An objective specification which specifies the endpoint of a sustainable development process and is part of a sustainable development goal specification.

sustainable development indicator =

A data item which is about some sustainable development process that has as participant some socioeconomic or environmental system.

Resources and assets



Resources and Assets

‘resource role’ =

a role which is realized by conferring some benefit to its consumer.

‘asset role’ =

a resource role which is realized by conferring an economic benefit to the person or organization which controls its bearer in some economic system.

‘system’

= a material entity consisting of multiple components that are causally integrated.

http://purl.obolibrary.org/obo/RO_0002577

RESEARCH

Open Access

The environment ontology: contextualising biological and biomedical entities

Pier Luigi Buttigieg^{1*}, Norman Morrison⁴, Barry Smith³, Christopher J Mungall², Suzanna E Lewis²
and the ENVO Consortium

Populations and Systems

'resilience' =

a disposition of an entity to recover its previous composition, qualities, and functionality following some perturbation.

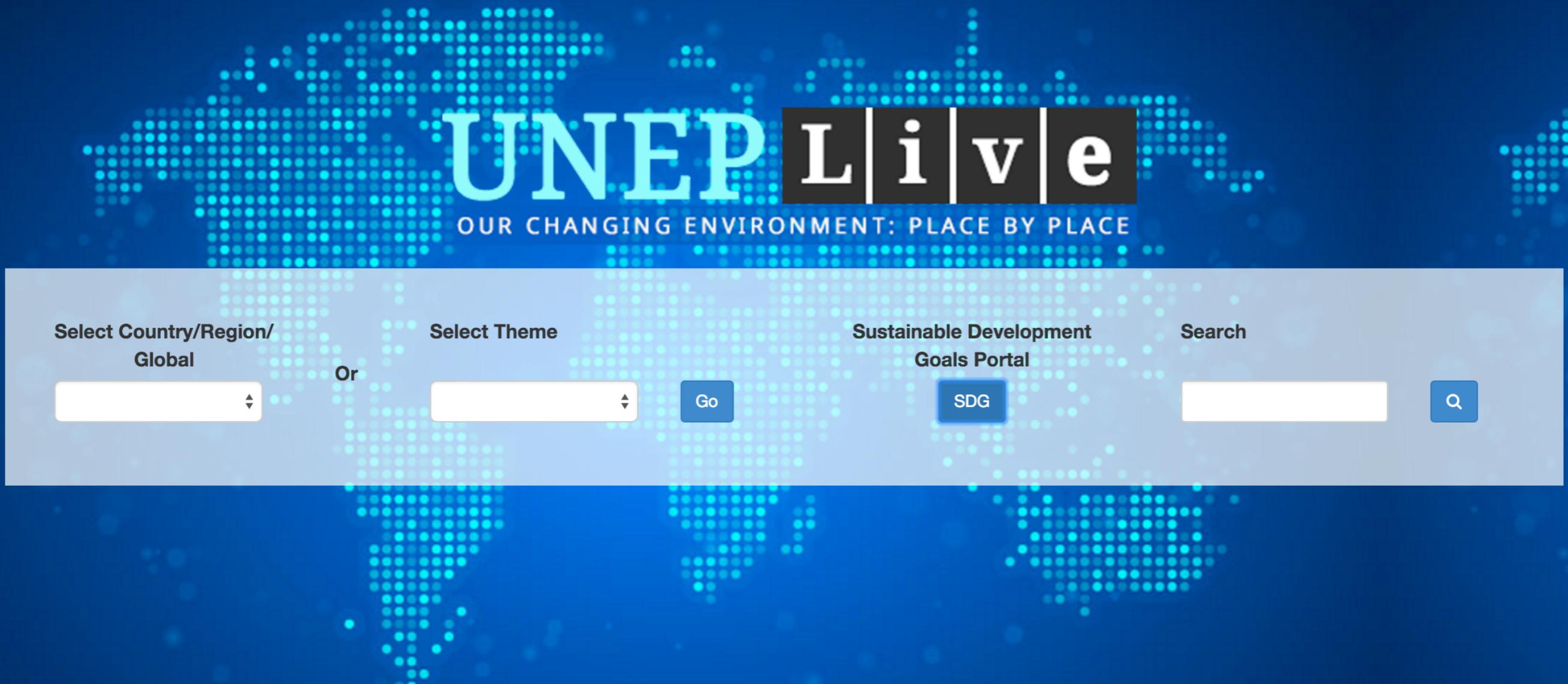
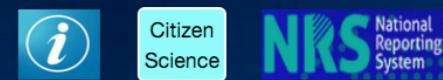
'robustness' =

a disposition of an entity to resist change to its composition, qualities, and functionality in response to some perturbation.

'vulnerability' =

a disposition of an entity to undergo change, usually negative or undesirable, in response to some exposure process.

UNEP Live



The screenshot shows the UNEP Live homepage. At the top, the UNEP Live logo is displayed with the tagline "OUR CHANGING ENVIRONMENT: PLACE BY PLACE". Below the logo are four search/filter options: "Select Country/Region/Global" with a dropdown menu, "Select Theme" with a dropdown menu and a "Go" button, "Sustainable Development Goals Portal" with a "SDG" button, and a "Search" bar with a magnifying glass icon. The background features a blue gradient with a dotted map of the world.

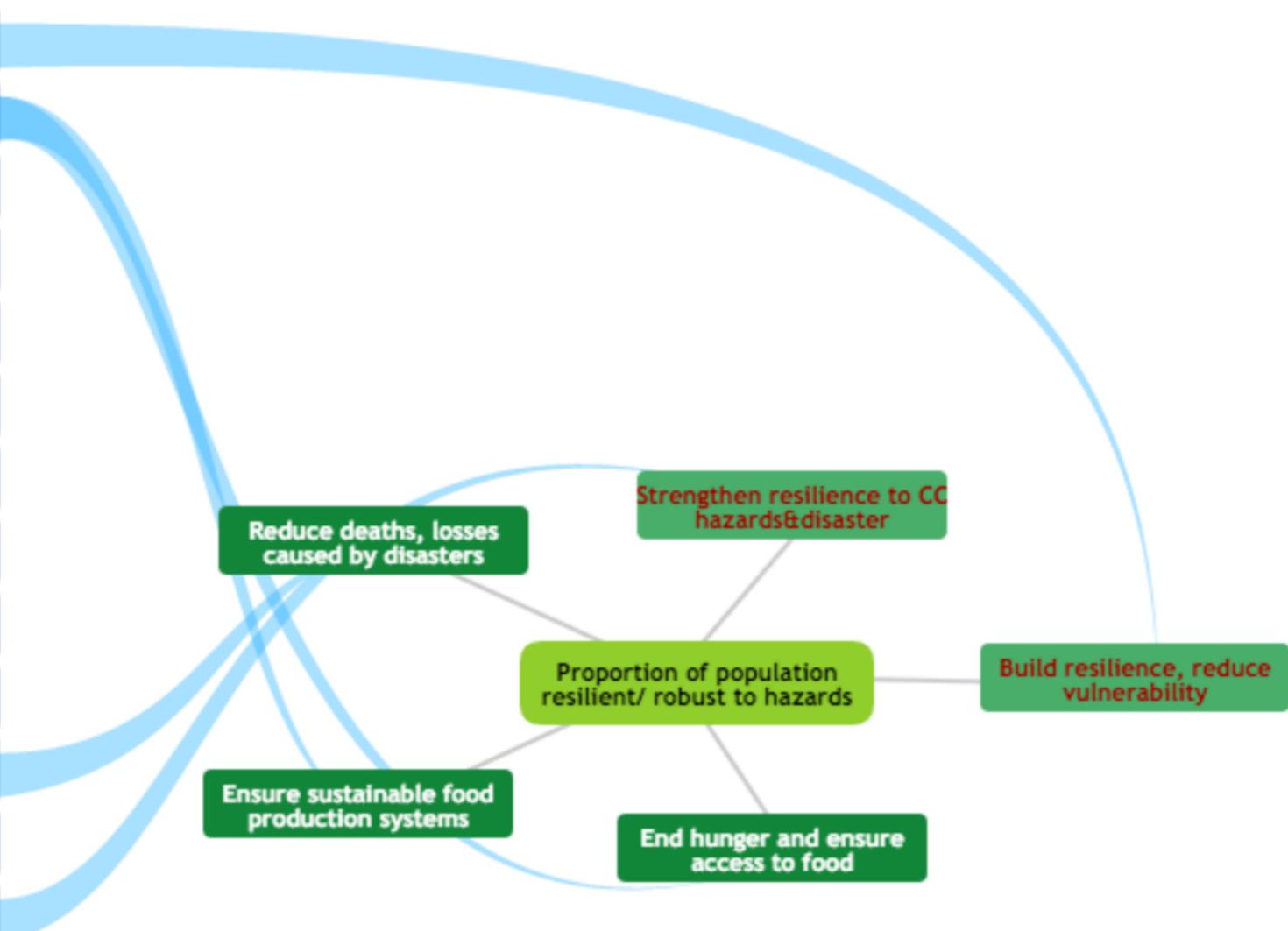
UNEP Live

Search for a term: resilience

(optional) AND

Sustainable Development Goals

- 1. No Poverty
- 2. Zero Hunger
- 3. Good Health And Well-being
- 4. Quality Education
- 5. Gender equality
- 6. Clean Water And Sanitation
- 7. Affordable And Clean Energy
- 8. Decent Work And Economic Growth
- 9. Industry, Innovation And Infrastructure
- 10. Reduced Inequalities
- 11. Sustainable Cities And Communities
- 12. Responsible Consumption And Production
- 13. Climate Action
- 14. Life Below Water
- 15. Life On Land
- 16. Peace, Justice And Strong Institutions
- 17. Partnerships For The Goals



Sustainable
Development Goal

Target

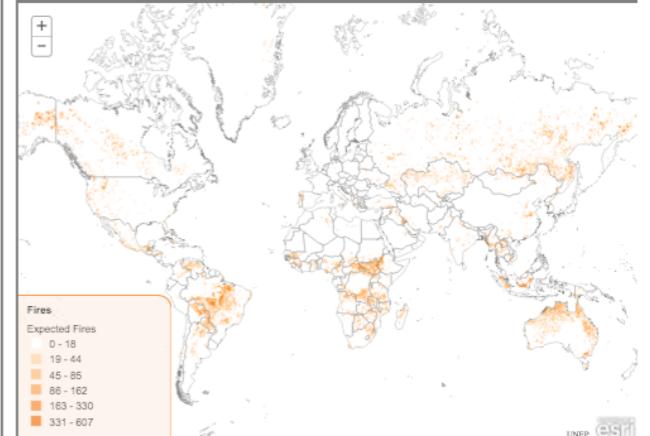
Indicator

SDG Interface Ontology

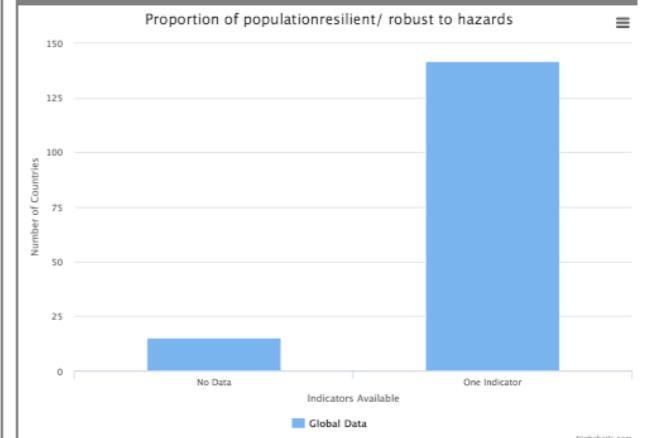
Shift-click to view Ontology Reference



World Map



Global Tracking of SDGs

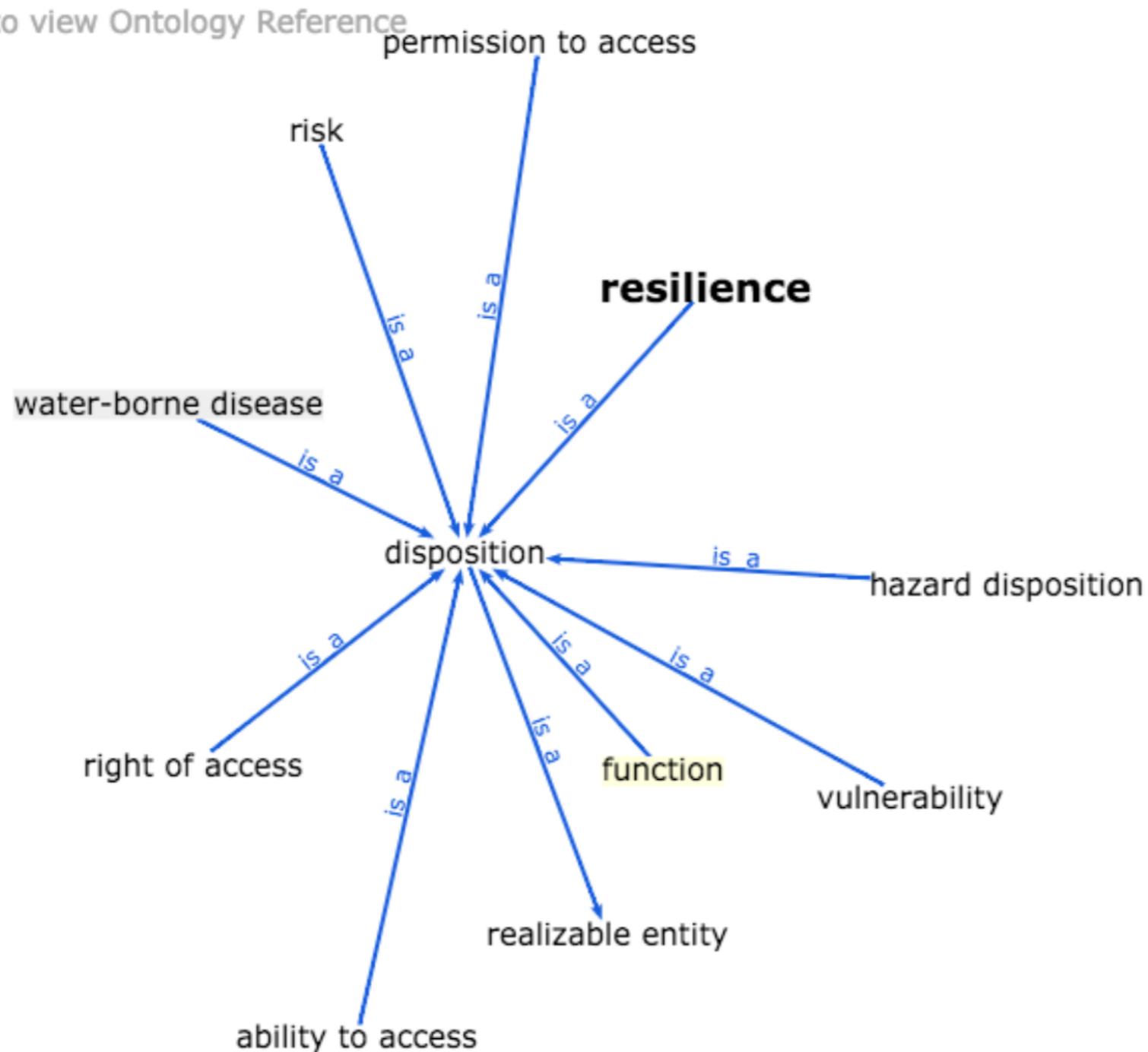


UNEP Live

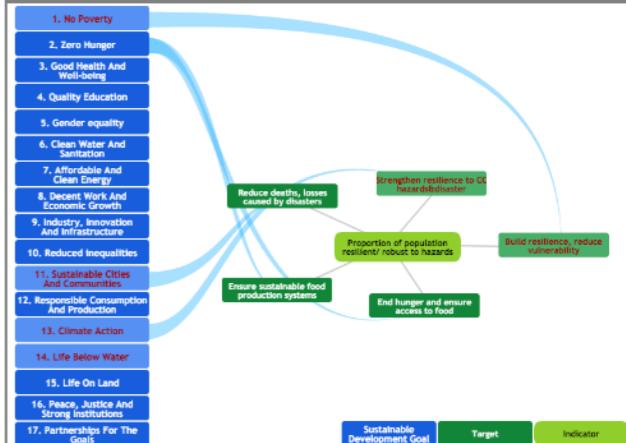
Search for a term: resilience

(optional) AND

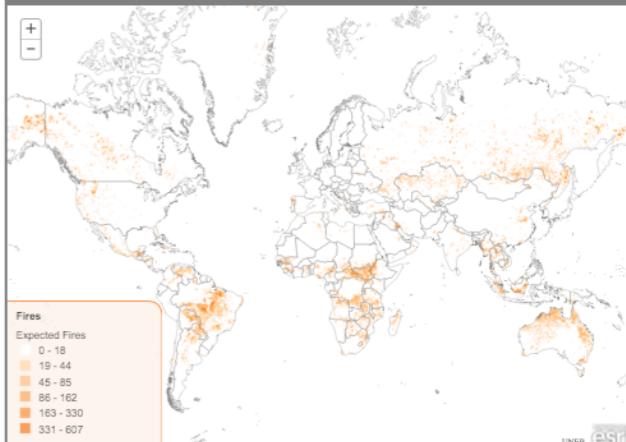
SDG Interface Ontology



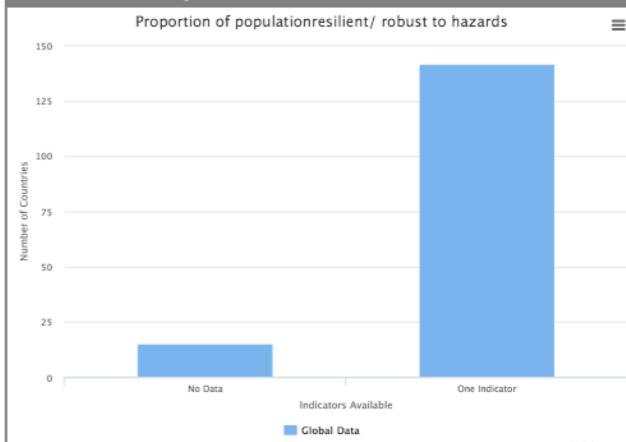
Sustainable Development Goals



World Map



Global Tracking of SDGs



[Code](#)[Issues 72](#)[Pull requests 2](#)[Wiki](#)[Pulse](#)[Graphs](#)[Settings](#)

The repository for the Sustainable Development Goals Interface Ontology — Edit

213 commits

5 branches

5 releases

5 contributors

Branch: master ▾

[New pull request](#)[New file](#)[Upload files](#)[Find file](#)[HTTPS ▾](#)<https://github.com/SDG-InterfaceOntology/sdgio>[Download ZIP](#) mark-jensen Merge remote-tracking branch 'origin/cmungall-patch-1'

Latest commit 6d332e5 27 days ago



docs Added files via upload

a month ago



experimental Added experimental directory with toy SDGIO ontology. This is for a r...

9 months ago



imports new release with initial classes to support metadata tagging

2 months ago



scratch sort

5 months ago



src Fixed typo in sparql query, fixes #96 - regenerated report

2 months ago



.gitignore #3

8 months ago



.travis.yml force travis into a java environment, this fixes the travis builds. B...

5 months ago



Makefile changing makefile so robot not required

5 months ago



README.md Added link to wiki

a month ago



sdgio.owl new release with initial classes to support metadata tagging

2 months ago

Happening Now

Implementing the model for goals, targets, indicators

Finalizing design for UNEPLive Portal

Release process, integrating with SDG database

Reaching out to domain specialists for feedback and refinement, promoting collaboration

Acknowledgments

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Ludgarde Coppens

Barry Smith

Priyanka deSouza

Ramona Walls

SDGIO Working Group

Lynn Schriml



Jacqueline Myriam McGlade (born May 30, 1955) is a British-born Canadian [marine biologist](#) and [environmental informatics](#) professor. Her research focusses on the spatial and nonlinear dynamics of ecosystems, climate change and scenario development.

She was Executive Director of the [European Environment Agency](#) from 2003-2013, where she was on leave from her post as Professor of Environmental Informatics at [University College London](#).

In 2014 she became Chief Scientist and Director of the Division of Early Warning and Assessment of the [United Nations Environment Programme](#) based in Nairobi.

Jacqueline McGlade



Born	May 30, 1955
Nationality	British-Canadian
Fields	Science Policy , Environmental informatics , Marine science , Theoretical ecology , Ichthyology

ICBO and BioCreative 2016

Joint International Conference on Biological Ontology and
BioCreative (2016)

August 1 - 4, 2016

Oregon State University, Corvallis, OR, USA

Food, Nutrition, Health and Environment for the 9 billion

