Determining Gaps in Global Efforts towards the achievement of the SDGs through the use of Topic Modeling on News Articles

NLP Group 5
Cruzada
Madrigal
Patalud

Sustainable Development Goals

2015

17 goals to achieve by UN members by 2030

169 SDG targets & 232 unique indicators

Increase in sustainable development interest due to economic instability, finite resources, and environmental challenges.

Assessing and tracking Sustainability Indicators are expensive and time consuming

The project aims to measure success on achieving Sustainable Development targets through Topic Modeling
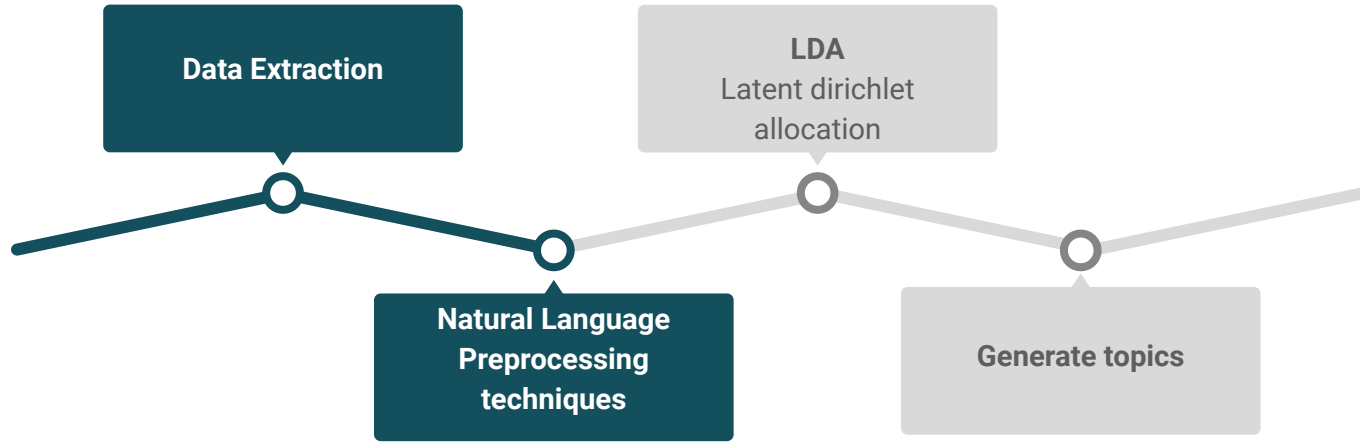

Focus on 5 SDGs related to the environment
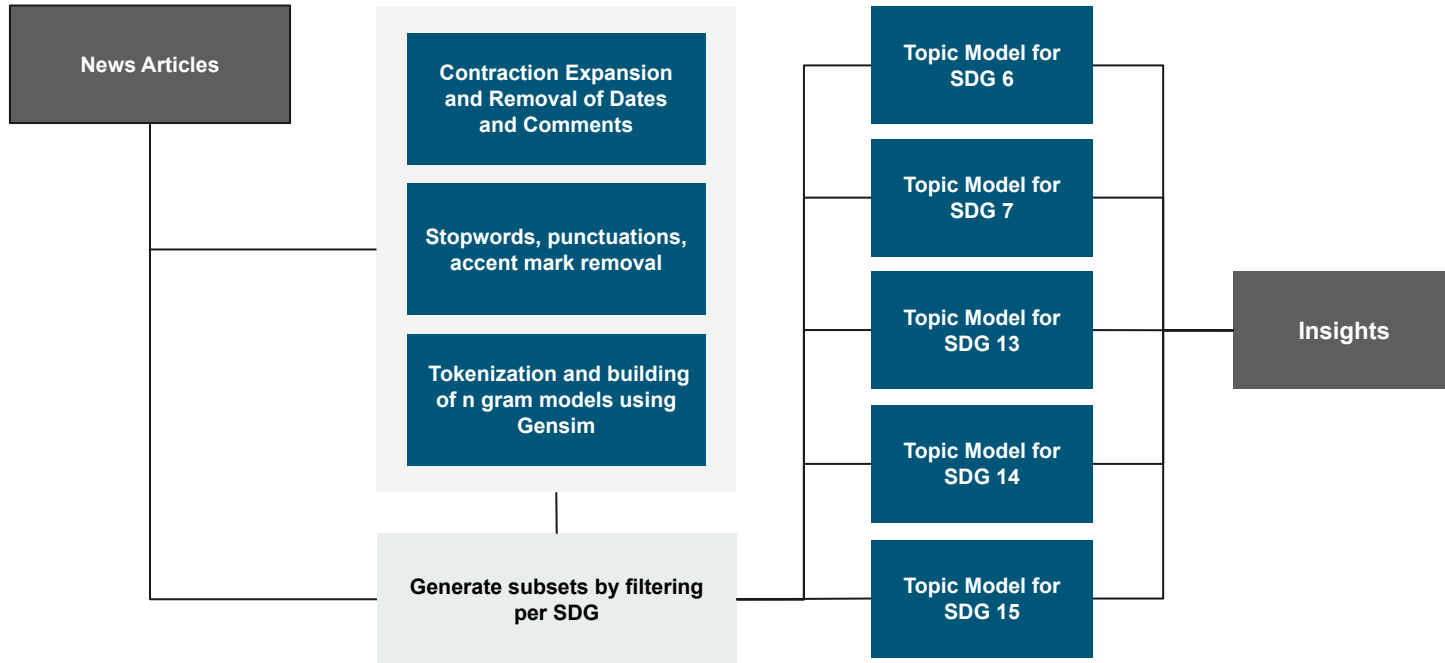
News articles from SDG Knowledge Hub

1000 Latest News Articles scraped

Methodology

News Articles

Contraction Expansion and Removal of Dates and Comments

Stopwords, punctuations, accent mark removal

Tokenization and building of n gram models using Gensim

Generate subsets by filtering per SDG

Topic Model for SDG 6

Topic Model for SDG 7

Topic Model for SDG 13

Topic Model for SDG 14

Topic Model for SDG 15

Insights

SDG 6: Gap to strengthen wastewater treatment improvement, water resources management and protection of water related ecosystems

TOPICS

- Top Level SDG Policies and Initiatives.
- Call for cooperation and enhanced planning for water and wastewater resources
- River Rehabilitation as part of Urban Cities.
- News related to UN Agencies and UN Member States
- Health, Sanitation, and Water
- Biodiversity, Forest, Nature
- Intersectionality with Climate Change and Displaced People
- Institutional Financing
- Water Scarcity/ Water Access
- Voluntary Reviews, Audits, meeting stakeholder expectations

TARGETS

6.1: Safe and affordable drinking water

6.2: End open defecation and provide access to sanitation and hygiene

6.3: Improve water quality, wastewater treatment and safe reuse

6.4: Increase water use efficiency and ensure freshwater supplies

6.5: Implement integrated water resources management

6.6: Protect and restore water-related ecosystems

6.A: Expand water and sanitation support to developing countries

6.B: Support local engagement in water and sanitation management

GAPS

6.3, 6.5, and 6.6

SDG 7: Gap to strengthen expansion of energy services in developing countries

- Events and Meetings related to the United Nations
- Green Financing as response to Public Demands
- Energy Efficiencies
- Voluntary Reviews, Audits, Meeting Stakeholder Expectations
- Climate Change, COP, and the Paris Agreement
- Hazardous Wastes and recovery of metal from waste
- Intersectionality with Climate Change and the rest of the Environment
- UN Agencies
- SDG Reports by major organizations (WHO, UN, OECD, etc.)
- Whole of Government, Whole-of Society approaches
- Discussion on Stakeholder Engagement

TARGETS

7.1: Universal access to modern energy

7.2: Increase global percentage of renewable energy

7.3: Double the improvement in energy efficiency

7.A: Promote access, technology and investments in clean energy

7.B: Expand and upgrade energy services for developing countries

GAPS

7B

SDG 13: Gap to strengthen resilience and adaptive capacity to climate-related disasters

TOPICS

- Trend of natural resources and global emissions
- Helping under-developed countries adapt to sustainable lifestyle
- UN and international organization plans for sustainable development
- Government response towards the COVID-19 pandemic
- Formation of amendments to reduce carbon emissions of various countries
- Financial institutions steer up capital for climate aligned assets

TARGETS

13.1: Strengthen resilience and adaptive capacity to climate-related disasters

13.2: Integrate climate change measures into policy and planning

13.3: Build knowledge and capacity to meet climate change

13.A: Implement then UN Framework Convention on Climate Change

13.B: Promote mechanisms to raise capacity for planning and management

GAPS

13.1

SDG 14: Gap to strengthen reduction of ocean acidification and sustainable fishing

TOPICS

- Reduction of Plastic Waste
- Sustainable use of ocean and marine resources
- Biodiversity Species Protection
- Climate Action Initiatives
- Sustainable Development Plans Reporting
- Global SDG initiatives
- Monitoring of SDG reviews

TARGETS

14.1: Reduce marine pollution
14.2: Protect and restore ecosystems
14.3: Reduce ocean acidification
14.4: Sustainable Fishing
14.5: Conserve coastal and marine areas
14.6: End subsidies contributing to overfishing
14.7: Increase the economic benefits from sustainable use of marine resources

GAPS

14.3, 14.4, 14.6

SDG 15: Gap to strengthen restoration of degraded land, elimination of poaching and trafficking of protected species

TOPICS

- Land Restoration
- Managing world peatlands
- Presentation of Voluntary National Reviews
- Biodiversity of Species
- Biodiversity of Species
- Work Program
- Policies regarding Environmental Cooperation
- Development of Sustainable Policies
- Chemical management conventions
- Countries performance in achieving SDG goals
- Climate change
- Climate change support

TARGETS

15.1: Conserve and restore terrestrial and freshwater ecosystems
15.2: End deforestation and restore degraded forests
15.3: End desertification and restore degraded land
15.4: Ensure conservation of mountain ecosystems
15.5: Protect biodiversity and natural habitats
15.6: Protect access to genetic resources and fair sharing of the benefits
15.7: Eliminate poaching and trafficking of protected species
15.8: Prevent invasive alien species on land and in water ecosystems
15.9: Integrate ecosystem and biodiversity in governmental planning

GAPS

15.3, 15.7, 15.8

1. Identified Gaps

6.3, 6.5 and 6.6
- Wastewater treatment improvement,
- Water resources management
- Protection of water related ecosystems

7.B
- Upgrading of energy services for developing countries

13.1
- Strengthen resilience and adaptive capacity to climate-related disasters

14.3, 14.4 and 14.5
-Reduce ocean acidification, sustainable fishing, end subsidies contributing to overfishing

15.3, 15.7 and 15.8
-Ed desertification and restore degraded land
-Trafficking of protected species elimination
- Prevent invasive alien species

2. Common Topics across all SDGs

- Voluntary National Reviews
- SDG Program Initiatives
- Monitoring of SDG programs progress reports

Performing frequent itemset mining and association rule or clustering to identify co-occurring topics from the SDG news articles.

Perform Sentiment Analysis on each of the topics to understand tonality and/or polarity

Extend the dataset to span from 2015 to present time and conduct the same analysis to other SDGs

Explore other Topic modeling algorithms such as Hierarchical LDA which automatically selects n_topics

Extend the dataset with other SDG related news articles from major news outlets

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Thank You!