

Topic Modelling on Conference of Parties

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Over millions of years, the global climate has experienced fluctuations. However, since the beginning of industrialization, the composition of the atmosphere has changed due to the emission of greenhouse gases. This human-induced global warming is amplifying the natural greenhouse effect and causing detectable changes in the climate. This global warming also has a significant impact on humans and nature. Greenhouse gases such as carbon dioxide (CO₂), which are released into the atmosphere through the burning of fossil fuels such as coal, oil and natural gas and through large-scale land use such as the deforestation, are responsible for this and intensify the global warming (Myclimate, 2022).

To make leaders and the public more aware of the consequences of climate change, the United Nations Environment Programme (UNEP), The United Nations Environment Programme and the World Meteorological Organization (WMO), established the Intergovernmental Panel on Climate Change (IPCC). In 1990, the IPCC released its first assessment report, which led to the UN's ratification on the negotiation of the United Nations Framework Convention on Climate Change on December (Zhuomobutou, 2016). Therefore, UFCCC was adopted on 4 June 1992 at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil. It is also the first time in the world that a comprehensive control of greenhouse gas emissions such as carbon dioxide, The international convention to deal with the adverse effects of global warming on human economy and society is also a basic framework for international cooperation in dealing with global climate change (UNFCCC Conference, n.d.).

The COP is the supreme decision-making body of the Convention. All states that are parties to the Convention are represented at the COP. They review the implementation of the Convention and other legal instruments adopted by the COP and make decisions to promote

the implementation of the Convention. An important task of COP is to review national communications and emission inventories submitted by Parties. Based on this information, the COP assesses the impact of measures taken by Parties and the progress made in achieving the ultimate objective of the Convention (United Nations, n.d.).

The first Conference of Parties (COP1) is held on Berlin, Germany in 1995. After listening to the speeches of various experts and the heated discussion of the problem, delegates also reached agreement on a number of other important decisions. It is included the establishment of a pilot phase for the implementation of joint projects, agreement that the Permanent Secretariat should be located in Bonn, and decisions on the budget for the Secretariat, financial procedures and the establishment of the subsidiary bodies. The subsidiary bodies have been established and are set to begin work in October. Besides, the Committee also adopted recommendations on financial procedures and a scale of assessments for the administrative budget of the Convention for 1996 and 1997 (IISD, n.d.).

The COP2 was held in Geneva from July 8-19, 1996. More than 1500 participants from governments, intergovernmental organizations, and nongovernmental organizations attended the meetings (Shah, 2002). The COP2 sent several important political signals as the COP continues to pursue the goal of strengthening the commitments of industrialized countries to reduce greenhouse gas emissions beyond the year 2000. The COP2, marking the mid-point in the schedule for the fulfilment of the Berlin Mandate the Berlin mandate, noted a strong ministerial statement endorsing the findings of the IPCC Second Assessment Report and calling for "legally binding" commitments (Shah, 2002). And it also convened a ministerial roundtable that endorsed the statement's points.

On 11 December 1997, the COP3 was held in Kyoto, Japan. There, industrialised countries agreed on specific targets for reducing their greenhouse gas emissions. For this, a

general framework was established, the details of which would be worked out over the next few years. This became known as the Kyoto Protocol and Delegates from the hundreds of countries and region adopted the Kyoto Protocol, many countries agreed to stabilize or even reduce greenhouse gas emissions (Shah, 2002).

The COP4 took place in November 1998 in Buenos Aires, Argentina, and it planned to solve the remained issues from previous conferences. Because of the negative implementation from some countries, the efficiency is not obvious. Also, the COP4 prepares the ground for the implementation of the Convention and the entry into force of the Kyoto Protocol. The work plan sets deadlines for implementing the main rules and technical and political issues of the Kyoto Protocol.

At the COP5, in Bonn, Parties set a two-year deadline for strengthening implementation and preparing for the future entry into force of the Kyoto Protocol. Consultations were held on the development and transfer of technology and capacity-building in developing countries and countries with economies in transition.

In Hague, Netherland, the discussions throughout the environment rapidly into a high-level negotiation over the major political issues. The sixth session became the scene of many conflicts and disagreements, not only disagreements over consequences for non-compliance by countries that did not meet their emission reduction targets. Therefore, the inability of many countries to reach agreement eventually led to its suspension. the COP6 resumed negotiations in Bonn, Germany, from 17 to 27 July 2001, but made little progress in resolving the differences that had led to the impasse in Hague. But while the other parties were negotiating on key issues, the meeting was full of concessions for the national interest, so agreement was reached on most of the major political issues, which was surprising because expectations were so low before the meeting.

The COP7 will be crucial in determining the operating rules for the implementation of the Bonn Agreement and the Kyoto Protocol. A package of high-level political decisions on the implementation of the Kyoto Protocol was adopted in Marrakesh, Morocco.

In 2002, the eighth Conference of the Parties was held in New Delhi, India. The Delhi Declaration adopted at the conference stressed that the fight against climate change must be carried out within the framework of sustainable development. It continued to place demands on developed countries in terms of greenhouse gas emissions, but also put forward expectations for forestation activities. Unfortunately, many developed countries refuse ratification.

In Milan in 2003, many developed countries were still in denial about the Kyoto protocol, which prevented it from being implemented. However, COP9 decided to use the Adaptation Fund to help developing countries better adapt to the impact of climate change on their economic development and reviewed national reports from many countries.

The COP10 was held in Buenos Aires, Argentina, from 6 December to 17 December 2004. The parties discussed the achievements made since the first United Nations Climate Change Conference ten years ago and the challenges facing the future, the impact of climate change, greenhouse gas emission reduction policies, technology transfer, financial mechanisms, capacity building and other important issues under the framework of the Convention.

In November 2005, the COP11 was held in Montreal, Canada. Nearly 10,000 delegates from 189 countries around the world are attending the conference, one of the largest intergovernmental meetings on climate change ever (Wikipedia, n.d.). The Kyoto Protocol entered into force, and the Conference extended it without delay, extending the Kyoto Protocol to 2012, and further reducing greenhouse gas emissions by starting negotiations.

The COP12 took place between November 6 and 17, 2006 in Nairobi, Kenya. The conference brought more attention to Africa. The Nairobi work Plan and agreement to manage the fund prompted the world to step up efforts to help developing countries improve their capacity to cope with climate change.

The COP13 is held in Bali, Indonesia. Negotiations on a precursor to the Kyoto Protocol have been dominated. The conference of environment ministers and experts agree on a road-map, timetable and concrete steps for negotiations with a view to reach agreement by 2009. It is debatable whether this global meeting on climate change has achieved anything significant at all.

In December 2008, the 14th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) was held in Poznan, Poland. On July 8, 2008, g8 leaders agreed on long-term greenhouse gas reduction targets at the G8 summit. G8 leaders said in a statement that they seek to work with other parties to the United Nations Framework Convention on Climate Change (UNFCCC) to achieve a long-term goal of reducing global greenhouse gas emissions by at least half by 2050, to be discussed and adopted with them in negotiations related to the convention. Negotiations on a successor to the Kyoto Protocol also dominated the meeting (China Meteorological Office, 2010).

In December 2009, the COP15 will be held in Copenhagen, The Capital of Denmark. A new agreement will be reached on international arrangements for reducing greenhouse gas emissions after the Kyoto Protocol expires in 2012, and a new agreement will be signed on future global action on climate change.

The COP16 was held in Cancun, Mexico, in 2010. It was also the sixth meeting of signatories to the Kyoto Protocol. But there is no commitment to phase 2 of the Kyoto Protocol.

The COP17 will be held in Durban, South Africa, in 2011. The Durban conference will focus on whether the second commitment period of the Kyoto Protocol will be approved and whether the Green Climate Fund (GCF) will be operational (China Meteorological Office, 2011).

Qatar hosted COP 18 which took place in Doha, this is the first time the United Nations climate change conference has been held in the Gulf. As 2012 is a critical time point for the end of the first commitment period of the Kyoto Protocol and the launch of the Durban platform to discuss post-2020 measures to address climate change, all parties hope that the Doha Climate Conference will serve as a bridge between the past and the future in the international community's efforts to address climate change. Finally, The Doha Amendment to the Kyoto Protocol (accepted before entering into force) has a limited scope for a second commitment period from 2012 to 2020.

COP19 was held in Warsaw in 2013 and called for aid paid by developed countries to help developing countries reduce their emissions. Besides, the Warsaw Mechanism is also proposed to provide expertise and possible assistance to developing countries to deal with loss and damage caused by natural extreme disasters such as heatwaves, droughts and floods, as well as threats such as rising sea levels and desertification (Wikipedia, n.d.).

In 2014, Lima, Peru hosted the COP20. This conference will be an important building block for a successful outcome at the Paris climate Conference next year, and it is hoped that important elements of a new climate agreement in 2015 will be agreed at the conference for further negotiation in Paris. In addition, the conference agreed on transparent, quantifiable and comparable greenhouse gas reduction targets for the coming months (China Carbon Emission Trading Network, 2014).

The COP21 was held in Paris in 2015. The Paris Agreement states that all parties will strengthen the global response to the threat of climate change and hold the increase in the global average temperature below 2 degrees Celsius above pre-industrial levels. The world will peak greenhouse gas emissions as soon as possible and achieve net zero greenhouse gas emissions in the second half of this century. In addition, all parties will participate in the global action on climate change through their intended contributions. Developed countries will continue to take the lead in reducing emissions and strengthen financial, technological and capacity building support to developing countries to help them mitigate and adapt to climate change.

Again, Marrakech is the host in 2016. The conference focused on water scarcity, water cleanliness and water-related sustainability, a major problem in many developing and African countries. Furthermore, the conference also discussed how to implement the provisions of the Paris Agreement and how countries should implement their Intended Nationally determined contributions.

In 2017, the COP is held in Bonn. The purpose of the conference was to discuss and implement plans to combat climate change, including details of how the Paris Agreement will operate after it enters into force in 2020, and to outline the steps needed to bring the Paris Agreement into force in 2018.

The 24th COP is hosted in Katowice, one of the most important tasks is to formulate and adopt a set of decisions to ensure the full implementation of the Paris Agreement. The meeting agreed on rules for implementing the Paris Agreement in force, a rulebook on how governments measure and report on their efforts to reduce emissions. But thorny issues, such as how to expand existing commitments to cut emissions and how to provide financial help to

poor countries, were put off until the next meeting as the parties struggled to reach agreement.

After a year, originally, Chile is the host of the COP. But at the end of year, the president of Chile gives the chance up hence the COP25 is held in Madrid, Spain. Fortunately, the European Union reached an agreement on the European Green Deal, which should reduce its emissions to zero by 2050. In addition, countries, cities, businesses, and international coalitions have made many commitments. But the pace of global warming has not slowed down significantly, and the financial and technological support from developed countries to developing countries in terms of carbon emissions has not been fully realized. The outcome was disappointing at a time when climate action and concrete measures are seen as urgent.

The COP 26th is held in Glasgow in 2021. This is the first conference of the Parties to the Paris Agreement since it entered the implementation stage. Within about two weeks, parties worked together to bridge differences and expand consensus, and finally reached the implementation rules of the Paris Agreement, laying a good foundation for its implementation (Wikipedia, n.d.). In addition, 197 countries agreed to a new agreement, called the Glasgow Climate Convention, aimed at avoiding dangerous climate change. The agreement reaffirms the Paris Agreement's temperature target of limiting the rise in global average temperatures to well below pre-industrial levels of 2°C and arrive net zero emissions around mid-century, along with significant reductions in other greenhouse gases (Wikipedia, n.d.). In addition, the agreement intends to phase out the use of unreduced coal power and more than 40 countries have pledged not to use coal. More importantly, the parties agreed to extend the long-term financing agenda until 2027, with developed countries continuing their existing obligations until 2025 and completing the post-2025 quantitative financing arrangements by 2024 to implement the Requirements of the Paris Agreement on the Global

Adaptation Goals and to enhance understanding of the global Adaptation Goals (Wikipedia, n.d.).

- Information Table of COP:

COP	Location	Year
1	Berlin	1995
2	Geneva	1996
3	Kyoto	1997
4	Buenos Aires	1998
5	Bonn	1999
6	Hague & Bonn	2000
7	Marrakesh	2001
8	New Delhi	2002
9	Milan	2003
10	Buenos Aires	2004
11	Montreal	2005
12	Nairobi	2006
13	Bali	2007
14	Poznan	2008
15	Copenhagen	2009
16	Cancun	2010
17	Durban	2011
18	Doha	2012
19	Warsaw	2013

20	Lima	2014
21	Paris	2015
22	Marrakech	2016
23	Bonn	2017
24	Katowice	2018
25	Madrid	2019
26	Glasgow	2021

- Data:

In total, I manually find about 260 related articles for 26 COPs. And each COP have about 10 articles. There are 2 types of files in the text data (PDF and txt). In this case, I build up the PDF reader and the txt reader to read the articles easily and transform each article into a string in Python.

```
# PDF reader
def read_pdf(fileloc):
    import PyPDF2
    out = []
    #pdffile=PyPDF2.PdfFileReader(open('fileloc', mode='rb'))
    pdfFileObject = open(fileloc, 'rb')
    pdfReader = PyPDF2.PdfFileReader(pdfFileObject)
    count = pdfReader.numPages
    for i in range(count):
        page = pdfReader.getPage(i)
        output = page.extractText()
        out.append(output)
    add = ''
    result = add.join(out)

    return result

import numpy as np
import pandas as pd

# txt reader
def read_txt(file):
    file=open(file,encoding='utf-8')
    file=file.read()

    return file
```

cop1_1	3/4/2022 7:45 pm	Text Document	50 KB
cop1_2	3/4/2022 7:47 pm	Text Document	1 KB
cop1_3	3/4/2022 7:54 pm	Text Document	1 KB
cop1_4	3/4/2022 8:01 pm	Text Document	12 KB
cop1_5	3/4/2022 8:02 pm	Text Document	20 KB
cop1_6	3/4/2022 8:09 pm	Text Document	10 KB
cop1_7	3/4/2022 8:07 pm	Text Document	2 KB
cop1_8	3/4/2022 8:09 pm	Text Document	13 KB
cop1_9	3/4/2022 8:14 pm	Text Document	85 KB
cop1_10	3/4/2022 8:16 pm	Text Document	12 KB

- Text Data Pre-processing:

Data pre-processing is a very important part for NLP (natural language processing), it removes anything unrelated and anything which will interfere our results.

For instance, I lowercase all the files and remove all the stop words.

```
# Lowercase and Remove Stop Word
def lowercase_stopword(file):
    import spacy
    from nltk.tokenize import word_tokenize

    sp=spacy.load('en_core_web_sm')
    StopWord=sp.Defaults.stop_words
    file_token=word_tokenize(file)

    file_NoStopWord=[word for word in file_token if not word in StopWord]
    file1=[string.lower() for string in file_NoStopWord]
    file1=[string.strip("@#$%^&*(.,/?)[ ];;'~\n") for string in file1]
    return file1
```

Then, I remove all the space and number from the files.

```
def remove_space(f):

    # Remove space
    for i in f:
        if i == '':
            f.remove('')
    return f
```

After that, I lemmatize the files and transform it into a word list in Python, which is an intelligent way to return the original form of a word.

```
def Lemmatize(filelist):
    import nltk
    from nltk.stem import WordNetLemmatizer
    lemmatizer=WordNetLemmatizer()
    lemmatized_output=[lemmatizer.lemmatize(word) for word in filelist]
    return lemmatized_output
```

- Method:

1. Corpus

The corpus refers to the collection of the documents, so I try to combine each transformed list into one as my corpus.

```
COP_corpus=my_corpus([f1,f2,f3,f4,f5])
COP_corpus = [x for x in COP_corpus if not any(x1.isdigit() for x1 in x)]
len(COP_corpus),type(COP_corpus)
```

2. Word Cloud

Word cloud is a visual representation of text data, which is often used to visualize free form text. Tags are usually single words, and the importance of each tag is shown with font size.

But word clouds are just a simple visualisation, it lacks context and obscure the relative importance of themes. We do not know the difference on topics between each article and we do not know what is important.

3. Topic Modelling

Topic modelling is an unsupervised machine learning technique that's capable of scanning a set of documents, detecting word and phrase patterns within them, and automatically

clustering word groups and similar expressions that best characterize a set of documents (Monkey Learn, n.d.). In the project, I choose to separate all the articles for each COP into 3 topics.

4. Feature Extraction:

The method is to use the functions from sklearn in Python to extract the main words from the articles. Then return them into a Python list.

Result:

We can see here the red-coloured bars mean the estimated term frequency within the selected topic and the blue ones represent the overall term frequency. On the top, there is another hyperparameter that you can change by sliding. This parameter is for adjusting the relevance metric. Values of lambda that are very close to zero will show terms that are more specific for a chosen topic. Meaning that you will see terms that are "important" for that specific topic but not necessarily "important" for the whole corpus. As it increases, it will show a greater ratio of topic frequency to thesaurus frequency.

5. Output:

The output of topic modelling from COP1 to COP26 is uploaded at:

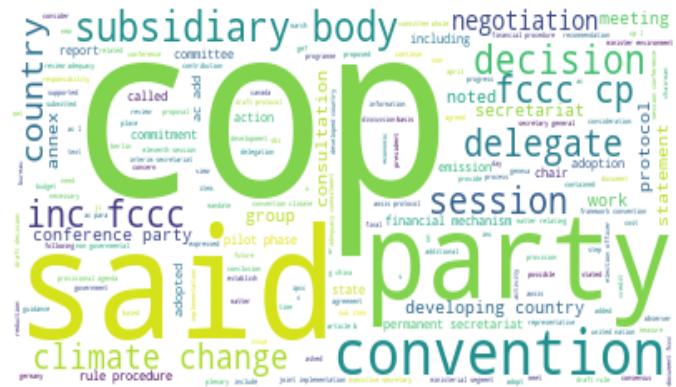
<https://github.com/JerryCheung1005/SC3008/tree/main/SC3008%20Topic%20Modelling>

6. Code:

The code is uploaded at:

https://github.com/JerryCheung1005/SC3008/blob/main/SC3008%20A3%20CODE%20final_virsion.ipynb

COP1:



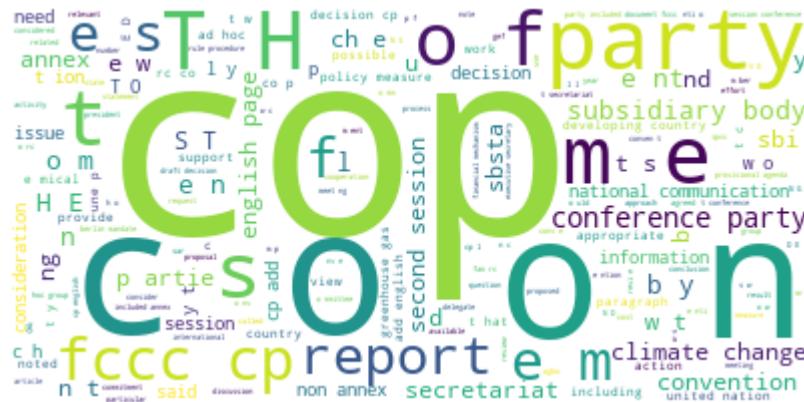
The main words in COP1 are subsidiary, delegate and climate change.

From topic 1, we know that the COP focus on organization's finance, the key words are convention, commitment, financial, subsidiary.

The topic 2 talks about the setting of the secretariat, key words are secretariat, conference, draft, document.

And the topic 3 indicates to reduce the emissions and the negotiation, the implementation between each country, key words are negotiation, procedure, committee, implementation.

COP2:



The most frequent and important words in word cloud are report, secretariat, subsidiary and climate change. Besides, there seems a problem, which lead to the single letters appears at the Word Cloud.

Word Cloud.

d', 'rejected', 'scientific', 'second', 'secretary', 'state', 'statement', 'switzerland', 'target', 'term', 'timothy', 'took', 'uniform', 'united']

feature of d2:
['18', '19', '1996', 'change', 'climate', 'july', 'legally', 'meeting', 'ministerial', 'noted', 'panel', 'place', 'policy', 'position', 'presented', 'proffered', 'reflected', 'rejected', 'scientific', 'second', 'secretary', 'state', 'statement', 'switzerland', 'target', 'term', 'timothy', 'took', 'uniform', 'united']

feature of d3:
['13', '1996', 'agbm', 'annex', 'change', 'climate', 'commitment', 'communication', 'cop', 'country', 'cp', 'decision', 'draft', 'emission', 'fccc', 'gef', 'group', 'is', 'measure', 'need', 'non', 'party', 'protocol', 'report', 'said', 'sar', 'sbi', 'sbsta', 'session', 'technology']

feature of d4:
['1996', 'agbm', 'agenda', 'annex', 'body', 'chairman', 'communication', 'conference', 'consideration', 'convention', 'cop', 'cp', 'decision', 'document', 'english', 'group', 'item', 'meeting', 'page', 'party', 'provisional', 'report', 'sbi', 'sbsta', 'second', 'secretariat', 'session', 'subsidiary', 'work']

feature of d5:
['15', '1996', 'add', 'annex', 'article', 'body', 'change', 'climate', 'communication', 'conference', 'convention', 'cp', 'decision', 'emission', 'english', 'focal', 'gas', 'greenhouse', 'implementation', 'information', 'measure', 'national', 'page', 'party', 'policy', 'report', 'secretariat', 'session', 'subsidiary']

feature of d6:
['2005', '2006', 'arties', 'ch', 'conference', 'conv', 'decision', 'fao', 'hat', 'ion', 'meet', 'mical', 'mm', 'mmittee', 'nce', 'nd', 'ng', 'note', 'nt', 'nti', 'ntr', 'nv', 'rc', 'secretariat', 'su', 'th', 'ttee', 'uld', 'une', 've']

feature of d7:
['13', '1996', 'agbm', 'annex', 'change', 'climate', 'commitment', 'cop', 'country', 'decision', 'delegate', 'developing', 'draft', 'emission', 'fccc', 'gef', 'group', 'measure', 'national', 'non', 'party', 'protocol', 'report', 'said', 'sar', 'sbi', 'sbsta', 'session', 'technology']

feature of d8:
['1996', 'berNSTein', 'change', 'climate', 'convention', 'cooperation', 'cop2', 'cop3', 'draft', 'exxon', 'framework', 'gas', 'group', 'industry', 'international', 'ipciea', 'issue', 'meeting', 'member', 'negotiation', 'oil', 'pressure', 'protocol', 'report', 'role', 'shell', 'target', 'technology', 'workshop']

feature of d9:
['1996', 'agreed', 'assessment', 'careful', 'change', 'climate', 'conclusion', 'convention', 'global', 'government', 'guideline', 'information', 'ipcc', 'maker', 'meas', 'objection', 'paragraph', 'policy', 'potential', 'preparation', 'question', 'raised', 'rejected', 'report', 'revision', 'scientific', 'second', 'summary', 'technical', 'shop']

feature of d10:
['11', '1996', '2nd', 'forest', 'geneva', 'greenhouse', 'held', 'including', 'intergovernmental', 'international', 'ipcc', 'ipf', 'july', 'legally', 'low', 'management', 'new', 'noted', 'parties', 'process', 'protocol', 'report', 'said', 'sar', 'sbi', 'sbsta', 'second', 'secretariat', 'session', 'subsidiary']

We can get the details from each article through feature extraction.

Besides, the topic modelling shows the three main topics: Emission reduction, draft of a document or commitment.

COP3:



The most frequent words in COP3 are Kyoto protocol, climate change and subsidiary body.

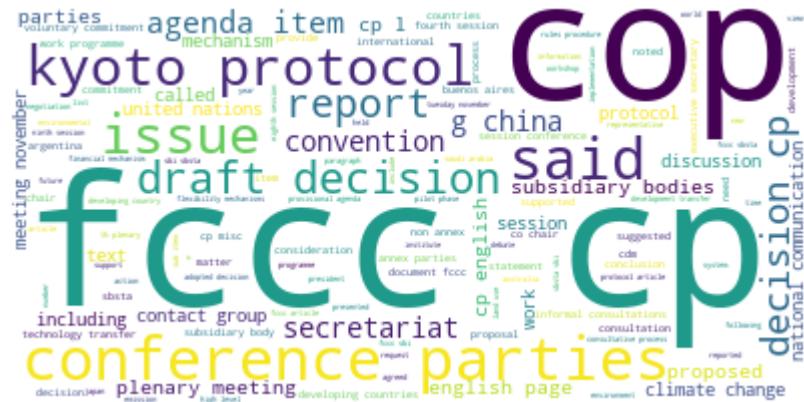
The topic modelling indicates: Kyoto protocol and its content, each department session and the implementation and targets.

The key words in topic 1 are: convention, subsidiary, reduction, environment, which are related to the content of the conference.

The most relevant terms in topic 2 are: Protocol, Kyoto and report, which are related to the Kyoto Protocol.

Topic 3 focusses on conference, emission, decision, climate, which may relate to the decision of the conference.

COP4:



The important words in COP4 are Kyoto Protocol, decision, discussion.

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feature of d1:
['1998', 'aires', 'argentina', 'buenos', 'cop', 'finalized', 'finding', 'greenhouse', 'implementing', 'instead', 'insurmountable', 'issues', 'kazakhstan', 'kyoto', 'mechanisms', 'meeting', 'nations', 'non', 'november', 'obligation', 'parties', 'place', 'plan', 'protocol', 'proved', 'reduction', 'remaining', 'took', 'united']

feature of d2:
['16', '1998', 'agenda', 'conference', 'convention', 'cp', 'decision', 'development', 'draft', 'english', 'environment', 'fccc', 'item', 'kyoto', 'meeting', 'minister', 'nations', 'november', 'page', 'paragraph', 'parties', 'plenary', 'president', 'protocol', 'report', 'sbi', 'session', 'subsidiary', 'united']

feature of d3:
['1998', 'action', 'agreement', 'aires', 'argentina', 'buenos', 'change', 'climate', 'conference', 'conferences', 'convention', 'cop', 'countries', 'emissions', 'frame', 'gas', 'greenhouse', 'held', 'issues', 'kyoto', 'meeting', 'meetings', 'nations', 'negotiate', 'paris', 'parties', 'planet', 'protocol', 'unfccc', 'united']

feature of d4:
['1997', 'adopted', 'annex', 'article', 'change', 'climate', 'commitments', 'cop', 'countries', 'cp', 'delegates', 'developing', 'development', 'differentiation', 'draf', 'emissions', 'eu', 'evolution', 'fccc', 'group', 'issues', 'kyoto', 'noted', 'parties', 'president', 'proposal', 'report', 'rules', 'said', 'sbi']

feature of d5:
['1998', 'adoption', 'agenda', 'annex', 'article', 'bodies', 'conference', 'consideration', 'convention', 'cop', 'cp', 'decision', 'document', 'draft', 'english', 'fccc', 'item', 'matters', 'november', 'page', 'parties', 'president', 'report', 'sbi', 'sbsta', 'secretariat', 'session', 'subsidiary', 'wish', 'work']

feature of d6:
['1998', '77', 'annex', 'chair', 'china', 'commitments', 'cop', 'countries', 'cp', 'decision', 'delegates', 'developing', 'draft', 'fccc', 'group', 'issue', 'issues', 'o', 'mechanisms', 'november', 'parties', 'plenary', 'process', 'proposed', 'protocol', 'said', 'sbsta', 'technology', 'transfer', 'work']

feature of d7:
['2000', 'action', 'aires', 'buenos', 'change', 'climate', 'conference', 'cutajar', 'deadline', 'deadlines', 'development', 'environment', 'eu', 'implementation', 'issu', 'kyoto', 'measures', 'mechanism', 'mechanisms', 'parties', 'plan', 'policies', 'protocol', 'said', 'secretary', 'technology', 'transfer', 'unfccc', 'work', 'year']

feature of d8:
['address', 'agreements', 'aires', 'broadcast', 'buenos', 'change', 'climate', 'conference', 'convention', 'cop', 'events', 'exhibits', 'held', 'hours', 'internet', 'i', 'live', 'meetings', 'nations', 'november', 'official', 'organizations', 'parties', 'protocol', 'sessions', 'special', 'time', 'unfccc', 'united', 'website']

feature of d9:
['1998', '4th', 'aires', 'argentina', 'buenos', 'change', 'climate', 'conference', 'convention', 'emissions', 'framework', 'gas', 'greenhouse', 'instead', 'insurmountable', 'issues', 'kazakhstan', 'kyoto', 'mechanisms', 'meeting', 'nations', 'non', 'november', 'parties', 'place', 'proved', 'remaining', 'took', 'unfccc', 'united']

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Besides, the key words in topic one is decision, report, delegate, plenary, implementation, discussion, and agreement. This may talk about the implementation problem.

Topic 2 focusses on subsidiary, secretariat, agenda, finance, issues, which may talk the remain problem of the previous conference.

In addition, the topic 3 focusses on item, country, development, protocol, draft. This topic seems to talk the implementation of the Kyoto protocol.

COP5:



The key words are Kyoto protocol, decision, subsidiary, item.

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feature of d1:
['1999', '25', 'bonn', 'conclusion', 'cop', 'germany', 'major', 'meeting', 'november', 'october', 'place', 'primarily', 'reach', 'technical', 'took']

feature of d2:
['1999', '25', 'bonn', 'conclusion', 'cop', 'germany', 'major', 'meeting', 'november', 'october', 'place', 'primarily', 'reach', 'technical', 'took']

feature of d3:
['1999', 'action', 'agenda', 'annex', 'article', 'body', 'climate', 'conference', 'convention', 'cp', 'decision', 'development', 'english', 'environment', 'ex', 'fccc', 'em', 'kyoto', 'meeting', 'minister', 'mr', 'november', 'page', 'party', 'president', 'protocol', 'report', 'session', 'subsidiary', 'th']

feature of d4:
['10', '12', '1999', 'agenda', 'annex', 'article', 'body', 'conference', 'consultation', 'convention', 'cp', 'decision', 'english', 'fccc', 'implementation', 'informal', 'tem', 'kyoto', 'matter', 'organization', 'page', 'paragraph', 'party', 'protocol', 'provisional', 'report', 'sbi', 'session', 'statement', 'subsidiary']

feature of d5:
['action', 'bonn', 'chancellor', 'change', 'climate', 'conference', 'convention', 'cop', 'country', 'developing', 'development', 'effort', 'emission', 'force', 'genera', 'global', 'government', 'greenhouse', 'industrialized', 'kyoto', 'message', 'nation', 'party', 'protection', 'protocol', 'reduce', 'secretary', 'session', 'world', 'year']

feature of d6:
['building', 'cdm', 'climate', 'commitment', 'convention', 'cop', 'country', 'developing', 'development', 'early', 'economic', 'economy', 'effort', 'emission', 'gain', 'bal', 'integrate', 'kyoto', 'mechanism', 'minister', 'national', 'need', 'negotiation', 'opportunity', 'party', 'political', 'protocol', 'reach', 'regime', 'review']

feature of d7:
['1999', 'adopted', 'annex', 'article', 'china', 'communication', 'compliance', 'cop', 'country', 'decision', 'delegate', 'draft', 'emission', 'eu', 'fccc', 'group', 'gline', 'issue', 'mechanism', 'national', 'need', 'non', 'november', 'party', 'process', 'protocol', 'report', 'said', 'sbi', 'sbsa']

feature of d8:
['action', 'activity', 'additional', 'agreed', 'argentina', 'based', 'bonn', 'carbon', 'compliance', 'conference', 'cop', 'country', 'developing', 'emission', 'gas', 'ghouse', 'kyoto', 'market', 'mechanism', 'party', 'period', 'protocol', 'reduction', 'sink', 'state', 'target', 'trading', 'united', 'work', 'year']

feature of d9:
['1999', 'change', 'climate', 'commission', 'conference', 'council', 'country', 'developing', 'emission', 'energy', 'eu', 'framework', 'greenhouse', 'having', 'held', 'strialized', 'kyoto', 'level', 'measure', 'mechanism', 'negotiation', 'november', 'october', 'parliament', 'party', 'protocol', 'ratification', 'regard', 'resolution', 'ss']

feature of d10:
['bonn', 'change', 'climate', 'co2', 'commitment', 'conference', 'convention', 'country', 'developing', 'economic', 'emission', 'forest', 'framework', 'gas', 'global', 'gas', 'greenhouse', 'industrialized', 'kyoto', 'market', 'mechanism', 'party', 'period', 'protocol', 'reduction', 'sink', 'state', 'target', 'trading', 'united', 'work', 'year']

```

Besides, the topic one focusses on protocol, item, agenda, country. These reflect the protocol is still controversial among countries.

The topic 2 focusses on session, decision, Kyoto, report, draft. These indicates the optimization of the protocol.

The topic 3 focusses on climate, issue, item, commitment, climate. These indicate there are issues on item and commitment.

COP6:



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feature of d1:
['2001', 'action', 'activity', 'agreed', 'agreement', 'bonn', 'cap', 'carbon', 'change', 'climate', 'compliance', 'cop', 'country', 'credit', 'emission', 'fund', 'germany', 'hague', 'included', 'issue', 'major', 'mechanism', 'meet', 'meeting', 'negotiation', 'protocol', 'reduction', 'state', 'target', 'united']

feature of d2:
['2001', 'action', 'activity', 'agreement', 'bonn', 'cap', 'carbon', 'change', 'climate', 'compliance', 'cop', 'country', 'credit', 'emission', 'forest', 'fund', 'germany', 'hague', 'included', 'issue', 'major', 'mechanism', 'meet', 'meeting', 'negotiation', 'protocol', 'reduction', 'state', 'target', 'united']

feature of d3:
['2000', 'adoption', 'annex', 'ar', 'bod', 'ce', 'contribution', 'cop', 'cp', 'ecutive', 'em', 'ent', 'er', 'eren', 'ex', 'fcc', 'fo', 'im', 'item', 'note', 'november', 'pa', 'party', 'report', 'rties', 'sbi', 'session', 'subsidiar', 'th', 'thirteenth']

feature of d4:
['14', '16', '2000', '24', '25', '26', '28', 'agenda', 'article', 'body', 'conference', 'convention', 'country', 'cp', 'decision', 'fccc', 'ii', 'item', 'kyoto', 'page', 'paragraph', 'party', 'president', 'protocol', 'report', 'session', 'sixth', 'statement', 'volume', 'work']

feature of d5:
['agreed', 'change', 'climate', 'community', 'conference', 'convention', 'cop', 'earth', 'effect', 'follow', 'hague', 'happening', 'international', 'managed', 'ministry', 'opened', 'order', 'outreach', 'participant', 'party', 'protocol', 'secretariat', 'site', 'time', 'totally', 'unfccc', 'united', 'vrom', 'web', 'world']

feature of d6:
['adverse', 'agreement', 'change', 'climate', 'conference', 'cooperation', 'cop6', 'countermeasure', 'country', 'developing', 'effect', 'effort', 'global', 'ii', 'international', 'issue', 'kyoto', 'nation', 'optimistic', 'outcome', 'overall', 'participate', 'participating', 'participation', 'party', 'pessimistic', 'protocol', 'scenario', 'unfccc', 'warming']

feature of d7:
['action', 'actual', 'banner', 'building', 'change', 'climate', 'conference', 'cop6', 'dike', 'earth', 'event', 'friend', 'group', 'hague', 'medium', 'message', 'metre', 'milieudefensie', 'netherlands', 'organisation', 'outside', 'partner', 'people', 'project', 'public', 'sandbag', 'symbol', 'took', 'united', 'world']

feature of d8:
['agreement', 'conference', 'convention', 'cop6', 'country', 'decision', 'desirability', 'developed', 'developing', 'evaluation']

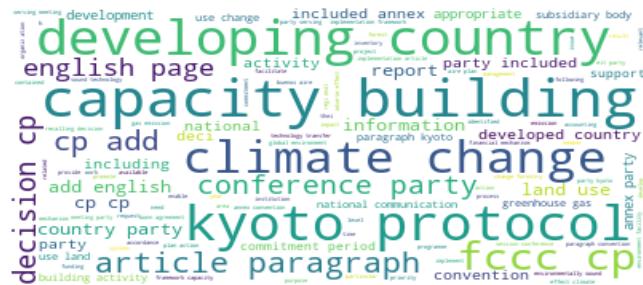
```

Topic 1 focusses on protocol, change, meeting, Kyoto, compliance, dike, statement.

Topic 2 focusses on country, item, decision, action, issue, agreement, fund, adoption. These indicate that countries still have issues on items, agreement, decision and fund.

Topic 3 focusses on agenda, mechanism, report, Hague, negotiation, Bonn, agreed. These indicate the location of the COP is Hague and Bonn, and each individual did a report and did negotiation.

COP7:



We can see the importance of the COP are Kyoto Protocol, climate change, developed and developing country and decision.

```
[{"2001": "55", "accounting", "achieve", "bring", "commitment", "consequence", "cop", "country", "decision", "development", "emission", "force", "kyoto", "main", "marrakech", "morocco", "nation", "negotiation", "negotiator", "operational", "party", "protocol", "ratify", "state", "summit", "sustainable", "target", "united", "world"]-----  
feature of d2:  
["10", "2001", "55", "accounting", "achieve", "bring", "commitment", "consequence", "cop", "country", "decision", "development", "emission", "force", "kyoto", "marrakech", "morocco", "observer", "october", "operational", "outlined", "party", "protocol", "ratify", "state", "summit", "sustainable", "target", "united", "world"]-----  
feature of d3:  
["12", "2001", "activity", "add", "annex", "article", "building", "capacity", "change", "climate", "conference", "convention", "country", "cp", "decision", "developing", "x", "fccc", "framework", "implementation", "information", "kyoto", "land", "national", "need", "paragraph", "party", "protocol", "shall", "technology"]-----  
feature of d4:  
["2001", "add", "adoption", "agenda", "annex", "article", "body", "conference", "convention", "cp", "decision", "draft", "ed", "em", "ent", "ex", "fccc", "ing", "item", "oto", "matter", "paragraph", "party", "protocol", "provisional", "report", "rule", "session", "seventh", "subsidiary"]-----  
feature of d5:  
["12", "14", "17", "2001", "annex", "article", "change", "climate", "communication", "convention", "country", "cp", "decision", "developed", "expert", "group", "guideline", "included", "kyoto", "mechanism", "modality", "morocco", "national", "paragraph", "party", "preparation", "protocol", "relating", "resolution"]-----  
feature of d6:  
["2001", "agreement", "compliance", "country", "emission", "flexibility", "group", "marrakech", "mechanism", "met", "morocco", "national", "necessary", "november", "obligation", "october", "operational", "package", "participation", "party", "process", "protocol", "public", "reach", "reached", "respectively", "review", "rule", "seventh", "united"]-----  
feature of d7:  
["address", "agreement", "change", "climate", "concern", "conference", "convention", "cost", "country", "decade", "developing", "economic", "energy", "ensure", "environment", "framework", "government", "level", "marrakech", "measure", "minimise", "mitigation", "negotiation", "november", "oil", "opec", "party", "producing", "reached", "treaty"]-----  
feature of d8:  
["2001", "55", "agreement", "bonn", "change", "climate", "conference", "cop", "emission", "kyoto", "marrakech", "medium", "meeting", "mentioned", "met", "morocco", "national", "necessary", "november", "obstruction", "october", "ordinated", "outstanding", "page", "party", "political", "previous", "protocol", "result", "treaty", "watered"]-----  
feature of d9:  
["10", "agreement", "allowed", "annex", "bonn", "carbon", "cdm", "certificate", "change", "climate", "commitment", "compliance", "cop", "country", "credit", "emission", "fund", "going", "inventory", "kyoto", "market", "mechanism", "november", "period", "reduction", "rule", "sequestration", "sink", "time"]-----
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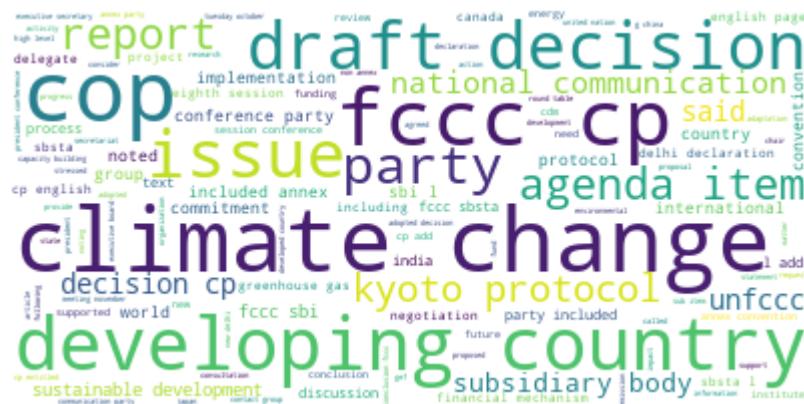
The topic one focusses on country, developing, decision, implementation, activity, forest etc.

These show the decision and implementation and activities on protecting the forests by developing countries.

The topic two focusses on change, emission, protocol, agreement, country. These show the attitude to the protocol among the countries and their attitudes on the agreement related to emission.

The topic three focusses on commitment, Kyoto, technology, developed, technology, country, request, effect, which show that the commitment from developed countries request them to provided fund and technology to other countries to reduce the effect.

COP8:



The frequent words of COP8 are draft, decision, climate change, issue.

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feature of d1:
['17', '1990', '2002', '55', 'article', 'carbon', 'cent', 'change', 'climate', 'cop', 'country', 'delhi', 'developed', 'dioxide', 'emission', 'meet', 'minimize', 'minist',
al', 'nation', 'needed', 'new', 'november', 'october', 'ratification', 'russia', 'share', 'time', 'transfer', 'united', 'world']

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feature of d2:
['2002', 'adopted', 'annex', 'chair', 'change', 'climate', 'conclusion', 'cop', 'country', 'decision', 'declaration', 'developing', 'development', 'draft', 'emission',
u', 'fccc', 'financial', 'group', 'implementation', 'issue', 'national', 'october', 'party', 'protocol', 'report', 'said', 'sbi', 'sbsta', 'unfccc']

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feature of d3:
['2002', 'add', 'agenda', 'annex', 'body', 'change', 'climate', 'conference', 'convention', 'cp', 'decision', 'development', 'draft', 'energy', 'fccc', 'included', 'item',
kyoto', 'meeting', 'national', 'party', 'president', 'protocol', 'recommendation', 'report', 'sbi', 'sbsta', 'session', 'subsidiary', 'sustainable']

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feature of d4:
['2002', 'agenda', 'article', 'body', 'conference', 'convention', 'cp', 'eighth', 'english', 'executive', 'fcc', 'financial', 'implementation', 'included', 'item',
mar', 'mechanism', 'pa', 'party', 'president', 'procedure', 'protocol', 'provisional', 'report', 'request', 'rule', 'secretary', 'session', 'statement', 'subsidiary']

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feature of d5:
['180', 'attending', 'business', 'change', 'climate', 'conference', 'convention', 'converged', 'cop', 'cop8', 'country', 'delegate', 'delhi', 'eighth', 'framework',
go', 'governmental', 'inter', 'medium', 'meet', 'nation', 'new', 'non', 'organisation', 'party', 'representative', 'unfccc', 'united', 'world']

-----
feature of d6:
['77', 'cdm', 'change', 'climate', 'commitment', 'conference', 'cop', 'country', 'declaration', 'delegate', 'delhi', 'developing', 'discussion', 'emission', 'eu',
future', 'group', 'india', 'industrialised', 'issue', 'kyoto', 'negotiation', 'new', 'project', 'protocol', 'report', 'said', 'small', 'world']

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feature of d7:
['2002', 'change', 'climate', 'commission', 'convention', 'cop', 'country', 'december', 'declaration', 'delhi', 'developing', 'emission', 'ended', 'eu', 'euractiv',
eu', 'expected', 'final', 'gas', 'greenhouse', 'implementation', 'industrialised', 'kyoto', 'new', 'october', 'parliament', 'party', 'protocol', 'ratified', 'world']

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feature of d8:
['annex', 'article', 'change', 'climate', 'communication', 'convention', 'cp', 'decision', 'delhi', 'development', 'effort', 'entity', 'entrusted', 'financial', 'fund',
dance', 'guideline', 'included', 'india', 'kyoto', 'mechanism', 'national', 'new', 'operation', 'party', 'preparation', 'programme', 'protocol', 'review', 'unfccc']

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feature of d9:
['2002', 'ccwg', 'change', 'climate', 'coming', 'conference', 'convention', 'cop', 'develop', 'discussion', 'event', 'fi', 'finance', 'financial', 'force', 'framework',
oup', 'insurance', 'kb', 'kyoto', 'october', 'party', 'pdf', 'presentation', 'project', 'sector', 'study', 'unep', 'unfccc', 'united']

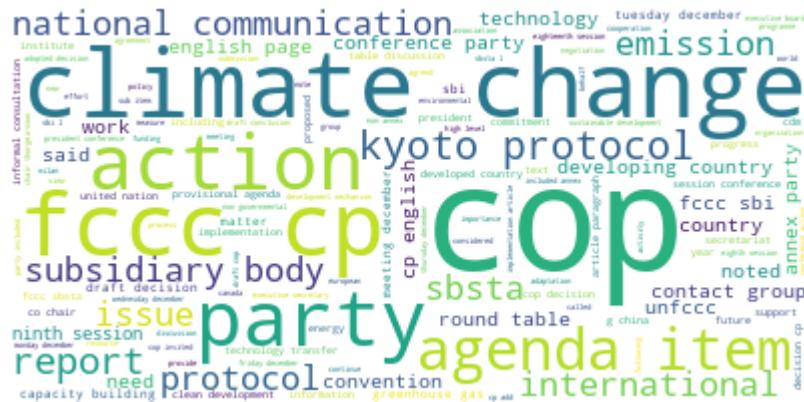
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Topic 1 focusses on decision, draft, protocol, report, conclusion, issue, implementation, sustainable, financial. These show the decision, draft, implementation and issues of the sustainable development in the conference.

Topic 2 focusses on climate, item, declaration, commitment, emission, discussion, which are related to the negotiation and decision about the items of the conference.

Topic 3 focusses on country, convention, mechanism, plenary, technology, fund, which may talk about the countries should provide technology and fund to help each other.

COP9:



We can see the key words in COP9 are climate change, Kyoto protocol, agenda, item.

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feature of d1:
['2003', 'annex', 'chair', 'change', 'china', 'climate', 'communication', 'conclusion', 'contact', 'cop', 'country', 'december', 'decision', 'draft', 'emission', 'group', 'implementation', 'issue', 'national', 'need', 'party', 'protocol', 'said', 'sbi', 'sbsta', 'secretariat', 'technology', 'tuesday', 'unfccc', 'work']

feature of d2:
['110', '12', '2001', '2003', '9th', 'agreed', 'change', 'climate', 'conference', 'country', 'established', 'framework', 'fund', 'italy', 'milan', 'nation', 'national', 'n', 'party', 'place', 'primarily', 'report', 'review', 'submitted', 'supporting', 'technology', 'took', 'transfer', 'unfccc', 'united']

feature of d3:
['00', 'action', 'adaptation', 'change', 'climate', 'commitment', 'continue', 'convention', 'cop', 'cop9', 'country', 'developing', 'development', 'emission', 'energy', 'european', 'gas', 'greenhouse', 'impact', 'kyoto', 'level', 'measure', 'mechanism', 'mio', 'necessary', 'party', 'protocol', 'round', 'technology']

feature of d4:
['2003', 'article', 'change', 'climate', 'communication', 'conference', 'convention', 'cop', 'country', 'cp', 'decision', 'developed', 'fund', 'global', 'greenhouse', 'ance', 'included', 'issue', 'italy', 'kyoto', 'land', 'mechanism', 'milan', 'national', 'operation', 'paragraph', 'party', 'preparation', 'protocol', 'technical']

feature of d5:
['2003', 'action', 'adoption', 'agenda', 'annex', 'background', 'body', 'conclusion', 'conference', 'consideration', 'convention', 'cop', 'cp', 'december', 'decision', 'ft', 'fccc', 'invited', 'item', 'kyoto', 'matter', 'party', 'president', 'protocol', 'provisional', 'report', 'sbi', 'sbsta', 'session', 'subsidiary']

feature of d6:
['12', '2003', 'add', 'agenda', 'annex', 'body', 'change', 'climate', 'conference', 'convention', 'country', 'cp', 'december', 'decision', 'development', 'energy', 'fccc', 'international', 'item', 'kyoto', 'meeting', 'mr', 'page', 'party', 'president', 'protocol', 'report', 'sbi', 'session', 'technology']

feature of d7:
['180', '2003', 'advance', 'afforestation', 'aspect', 'brought', 'carbon', 'cdm', 'climate', 'convention', 'forestry', 'italy', 'mechanism', 'milan', 'ninth', 'obtainir', 'package', 'party', 'point', 'procedure', 'project', 'recognition', 'reforestation', 'representative', 'rule', 'scope', 'sense', 'session', 'signatory', 'strong']

feature of d8:
['2003', 'action', 'cdm', 'change', 'climate', 'conference', 'convention', 'country', 'debate', 'december', 'developing', 'emission', 'explore', 'government', 'high', 'e', 'kyoto', 'level', 'meeting', 'milan', 'national', 'party', 'policy', 'project', 'protocol', 'sector', 'segment', 'tackle', 'technology', 'year']

feature of d9:
['1990', '2012', 'carbon', 'change', 'claussen', 'clean', 'climate', 'cop9', 'country', 'delegate', 'developing', 'development', 'differently', 'effort', 'emission', 'ended', 'far', 'kyoto', 'meeting', 'milan', 'nation', 'policy', 'project', 'protocol', 'say', 'sink', 'target', 'tree', 'waller', 'year']

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The topic 1 focusses on implementation, draft, agenda, issue, activity. It seems to tell the issue on this conference.

The topic 2 focusses on decision, item, climate, protocol, emission, discussion. It seems to show the conclusion of the conference.

The topic 3 focusses on country, conclusion, technology, action, guidance, request. Maybe it requests technology and fund on developed countries.

COP10:



The key words in COP 10 are International, technology, climate change, issue, item.

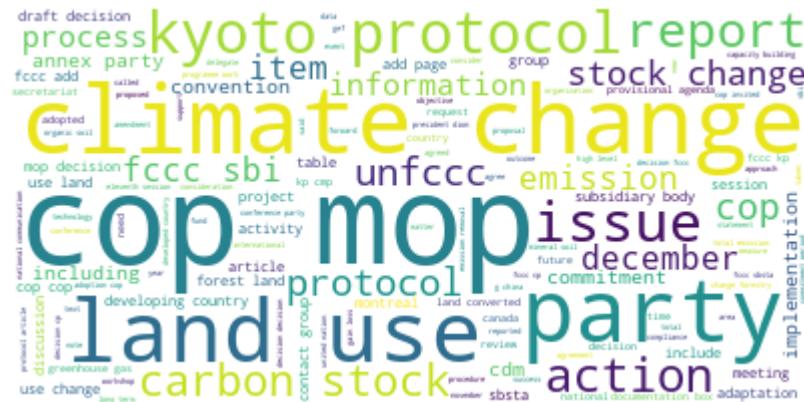
For feature extraction, there are some features extract from some documents are a single or a double letter, which seems useless. And the rest looks good.

The topic one focusses on climate change, Kyoto protocol, information, fund, building, future. These seem to tell the issue on fund and capacity of building to reduce climate change.

The topic two focusses on country, decision, conclusion, draft, discussion, programme, technology, request, sustainable. These seems to have discussion about requesting some countries to use technology to keep sustainable development.

The topic three focusses on implementation, agenda, action, emission, impact, financial. These seems to show the implementation of the protocol and the impact on financial.

COP11:



Key words in COP11 are Kyoto Protocol, climate change, issue, report.

['000', '11', '2005', 'agreement', 'canada', 'change', 'climate', 'cmp', 'conference', 'cop', 'event', 'intergovernmental', 'international', 'kyoto', 'largest', 'life', 'in', 'map', 'marked', 'meeting', 'minister', 'montreal', 'negotiate', 'november', 'party', 'place', 'plan', 'protocol', 'provides', 'quebec']
feature of d2:
['2005', 'add', 'area', 'box', 'carbon', 'category', 'change', 'converted', 'cp', 'cropland', 'data', 'emission', 'estimate', 'fccc', 'forest', 'gg', 'land', 'lulucf', 't', 'page', 'party', 'removal', 'report', 'soil', 'stock', 'submission', 'table', 'total', 'use', 'year']
feature of d3:
['10', '11', '2005', '23', 'action', 'adoption', 'agenda', 'annotation', 'background', 'body', 'conclusion', 'convention', 'cop', 'cp', 'decision', 'draft', 'eleventh', 'cc', 'invited', 'item', 'matter', 'mop', 'party', 'president', 'provisional', 'report', 'sbi', 'sbsta', 'session', 'subsidiary']
feature of d4:
['activity', 'adaptation', 'amendment', 'annex', 'cdm', 'challenge', 'change', 'climate', 'commitment', 'compliance', 'conference', 'cop', 'copii', 'country', 'decision', 'developing', 'discussion', 'fund', 'group', 'implementation', 'issue', 'kyoto', 'mechanism', 'montreal', 'mop1', 'party', 'procedure', 'project', 'protocol', 'technology']
feature of d5:
['2005', 'action', 'adaptation', 'adopted', 'annex', 'article', 'cdm', 'change', 'climate', 'commitment', 'conclusion', 'cop', 'country', 'december', 'decision', 'emission', 'fccc', 'group', 'implementation', 'issue', 'mop', 'november', 'party', 'programme', 'protocol', 'report', 'sbi', 'sbsta', 'unfccc', 'work']
feature of d6:
['action', 'change', 'climate', 'conference', 'convention', 'cop', 'country', 'dion', 'government', 'growing', 'kinley', 'kyoto', 'level', 'minister', 'montreal', 'mr', 'new', 'news', 'opening', 'opportunity', 'protocol', 'public', 'said', 'scientific', 'secretariat', 'strong', 'united', 'work', 'world']
feature of d7:
['11', '15', '2005', 'annex', 'article', 'biennium', 'budget', 'canada', 'change', 'climate', 'cmp', 'conference', 'convention', 'cop', 'country', 'cp', 'decision', 'development', 'included', 'kyoto', 'land', 'montreal', 'paragraph', 'party', 'programme', 'protocol', 'relating', 'resolution', 'united', 'use']
feature of d8:
['2005', 'canada', 'chair', 'change', 'climate', 'conference', 'convention', 'cop', 'copii', 'country', 'dion', 'framework', 'global', 'host', 'kyoto', 'meeting', 'minister', 'montreal', 'mop', 'mop1', 'nation', 'negotiation', 'north', 'party', 'period', 'place', 'president', 'protocol', 'signed', 'year']
feature of d9:
['2005', '30', 'action', 'approach', 'began', 'change', 'commitment', 'conference', 'copii', 'december', 'decision', 'development', 'discussion', 'emission', 'including', 'kyoto', 'main', 'mop1', 'necessary', 'need', 'negotiation', 'november', 'period', 'process', 'protocol', 'term', 'time', 'took', 'use', 'year']
feature of d10:
['action', 'adaptation', 'change', 'church', 'climate', 'commitment', 'community', 'conference', 'convention', 'cop', 'copii', 'country', 'decision', 'developing', 'development', 'discusses', 'emission', 'emissions', 'environment', 'global', 'host', 'kyoto', 'meeting', 'minister', 'montreal', 'mop', 'mop1', 'nation', 'negotiation', 'north', 'party', 'period', 'place', 'president', 'protocol', 'signed', 'year']

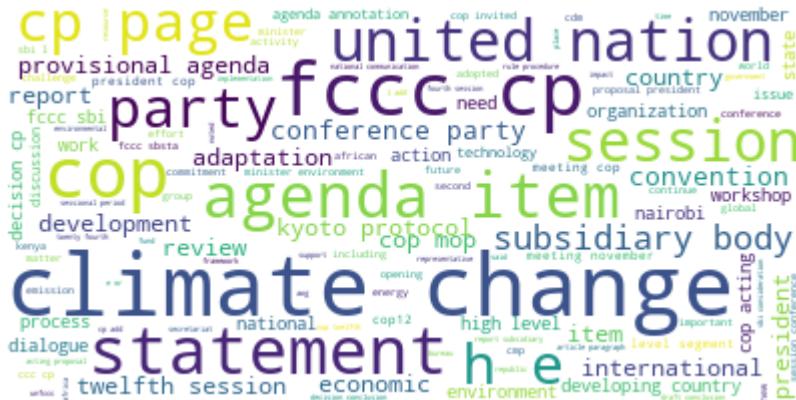
The feature extraction seems good. There is not error for reading PDF files.

The topic one focusses on decision, emission, protocol, country, commitment, draft. These seem to show the draft about the emission of the greenhouse gas by countries.

The topic two focusses on land, change, issue, action, item, annex, mechanism, cropland, request, organic. These show the request on the agricultural land aspect.

The topic three focusses on climate, report, Kyoto, conclusion, work, convert, forest, gas, matter. These indicates the topic about the what should do to reduce climate change currently according to the conference.

COP12:



Key words of COP12 are climate change, item, statement, agenda.

```
feature of d1:  
['12', '2006', 'adaptation', 'agreed', 'black', 'change', 'clean', 'climate', 'cmp', 'cop', 'country', 'delegate', 'developing', 'development', 'kenya', 'mechanism', 'mention', 'modality', 'nairobi', 'nation', 'noted', 'november', 'party', 'phrase', 'place', 'plan', 'poor', 'process', 'support']  
-----  
feature of d2:  
['12', '2006', 'action', 'adoption', 'agenda', 'annotation', 'background', 'body', 'convention', 'cop', 'cp', 'decision', 'fccc', 'group', 'invited', 'item', 'matter', 'mop', 'november', 'party', 'president', 'provisional', 'report', 'sbi', 'sbsta', 'session', 'subsidiary', 'th', 'twelfth']  
-----  
feature of d3:  
['2006', 'agenda', 'body', 'change', 'climate', 'conference', 'convention', 'cop', 'country', 'cp', 'draft', 'environment', 'fccc', 'item', 'meeting', 'minister', 'mr', 'organisation', 'page', 'party', 'president', 'report', 'sbi', 'secretary', 'session', 'state', 'statement', 'th', 'united']  
-----  
feature of d4:  
['2007', 'activity', 'adaptation', 'cdm', 'challenge', 'change', 'climate', 'commitment', 'conference', 'cop', 'cop12', 'country', 'decision', 'development', 'dialogue', 'discusion', 'emission', 'fund', 'future', 'issue', 'kyoto', 'mop', 'nairobi', 'party', 'project', 'proposal', 'protocol', 'reduction', 'review', 'technology']  
-----  
feature of d5:  
['cc', 'cdm', 'change', 'climate', 'commitment', 'conference', 'considers', 'convention', 'country', 'developing', 'development', 'economic', 'emission', 'energy', 'fuel', 'industrialised', 'kyoto', 'meeting', 'nation', 'need', 'november', 'opec', 'particular', 'party', 'progress', 'protocol', 'session', 'technology', 'work']  
-----  
feature of d6:  
['11', '12', '2006', 'act', 'action', 'adaptation', 'centre', 'change', 'climate', 'development', 'energy', 'environment', 'environmental', 'event', 'foreign', 'institute', 'international', 'ministry', 'nairobi', 'netherlands', 'november', 'panel', 'participant', 'place', 'policy', 'red', 'research', 'session', 'sustainable', 'tanzania']  
-----  
feature of d7:  
['11', '17', '2006', 'change', 'climate', 'convention', 'cop12', 'international', 'mnp', 'mop2', 'nairobi', 'nation', 'national', 'negotiation', 'netherlands', 'news', 'ember', 'oecd', 'overview', 'panel', 'party', 'policy', 'programme', 'protocol', 'provides', 'public', 'publication', 'relevant', 'site', 'support']  
-----  
feature of d8:  
['adaptation', 'change', 'climate', 'commitment', 'cop12', 'corresponding', 'country', 'deforestation', 'developing', 'emission', 'government', 'impact', 'later', 'mech', 'model', 'mop2', 'need', 'nicholas', 'officially', 'party', 'period', 'place', 'predicts', 'presented', 'project', 'protocol', 'reduction', 'stern', 'study', 'world']  
-----  
feature of d9:  
['adaptation', 'african', 'change', 'china', 'climate', 'cop12', 'country', 'day', 'delegate', 'delegation', 'developing', 'development', 'dimas', 'emission', 'environment', 'eu', 'felt', 'fund', 'general', 'mechanism', 'minister', 'national', 'new', 'presented', 'process', 'protocol', 'reduction', 'statement', 'supported', 'underlined']  
-----  
feature of d10:
```

The topic one focusses on meeting, statement, organization, adaptation, conclusion, matter, protocol, action. The topic indicates the content and the process of the conference.

The topic two focusses on item, climate, country, environment, technology, annex, mechanism, implementation, action, discussion. The topic shows that human should reduce climate change through technology and the result of their discussion.

The topic three focusses on agenda, session, convention, report, conference, draft, review, fund, global, economic, challenge, item. The topic seems to talk the problem of the conference on the economic aspect.

COP13:



Key words of COP13 are climate change, report, convention, Kyoto protocol.

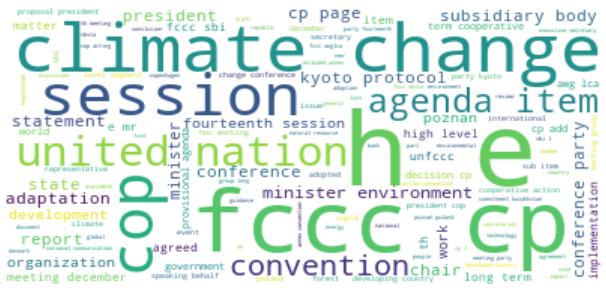
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feature of d1:  
['13', '2007', '2012', 'action', 'bali', 'cmp', 'convention', 'cop', 'cp', 'decision', 'hoc', 'implementation', 'indonesia', 'kyoto', 'lca', 'leading', 'long', 'main',  
ion', 'negotiation', 'new', 'nusa', 'period', 'place', 'plan', 'poland', 'post', 'timeline', 'took', 'urgently']  
  
feature of d2:  
['13', '2007', '27', 'action', 'adoption', 'agenda', 'background', 'body', 'cmp', 'conclusion', 'convention', 'cop', 'cp', 'december', 'decision', 'draft', 'fccc', 'im  
d', 'item', 'matter', 'meeting', 'organization', 'party', 'provisional', 'report', 'sbi', 'sbsta', 'session', 'subsidiary', 'thirteenth']  
  
feature of d3:  
['13', '2007', 'action', 'add', 'agenda', 'change', 'climate', 'conference', 'convention', 'cop', 'country', 'cp', 'decision', 'development', 'environment', 'fccc', 'it  
meeting', 'minister', 'mr', 'nation', 'page', 'party', 'president', 'report', 'sbi', 'session', 'statement', 'th', 'united']  
  
feature of d4:  
['14', 'agreement', 'bali', 'change', 'climate', 'closing', 'conference', 'december', 'delegate', 'lengthy', 'lie', 'meeting', 'moon', 'nation', 'negotiation', 'new',  
d', 'note', 'noted', 'pakistani', 'partner', 'party', 'photo', 'pleasure', 'plenary', 'pm', 'portugal', 'roadmap', 'secretary', 'unfccc']  
  
feature of d5:  
['2007', 'action', 'adopted', 'agreement', 'annex', 'bali', 'change', 'climate', 'commitment', 'conclusion', 'convention', 'cop', 'country', 'december', 'decision', 'de  
ping', 'emission', 'fccc', 'group', 'issue', 'mop', 'party', 'plenary', 'process', 'protocol', 'report', 'review', 'sbi', 'sbsta', 'work']  
  
feature of d6:  
['13', '15', '2007', 'accepted', 'bali', 'china', 'commitment', 'cop', 'copenhagen', 'country', 'december', 'economy', 'emerging', 'emission', 'greatest', 'including',  
p', 'particularly', 'party', 'place', 'reduction', 'road', 'second', 'significant', 'specific', 'state', 'target', 'time', 'united', 'usa']  
  
feature of d7:  
['07', '11', '12', '13', '2009', 'agreement', 'bali', 'change', 'china', 'climate', 'conference', 'cop', 'country', 'deal', 'emission', 'fight', 'gas', 'global', 'green',  
kyoto', 'nation', 'new', 'official', 'protocol', 'roadmap', 'said', 'say', 'state', 'united', 'world']  
  
feature of d8:  
['1995', '2007', 'agreement', 'bali', 'challenge', 'change', 'climate', 'cmp3', 'conference', 'cop', 'cop13', 'december', 'energy', 'event', 'framework', 'global', 'go  
ent', 'international', 'leader', 'level', 'lg', 'local', 'mayor', 'party', 'potential', 'representative', 'session', 'strong', 'unfccc', 'world']  
  
feature of d9:  
['bali', 'change', 'climate', 'country', 'december', 'developing', 'development', 'economic', 'efficiency', 'effort', 'energy', 'especially', 'forward', 'general', 'hi  
improve', 'innovation', 'instrument', 'measure', 'policy', 'progress', 'segment', 'social', 'solution', 'sustainable', 'technology', 'transfer', 'way', 'win', 'work']  
  
feature of d10:
```

The topic one shows that decision, session, report, country, draft, developing, developed, technology, future, global. It indicates that the conference requests developed countries to provide technology helps to developing countries to solve global problems.

The topic two pays attention to the word like climate, agenda, item, Bali, conclusion, issue, annex, environment, implementation, action, negotiation, matter, discussion. It seems to talk the content and the process of the conference.

The topic three focusses on convention, protocol, action, work, organization, emission, agreement, secretary, commitment, communication. It seems to indicate that organizations and countries should take action on the emission of the greenhouse gases, and they did some communication and commitment.

COP14:



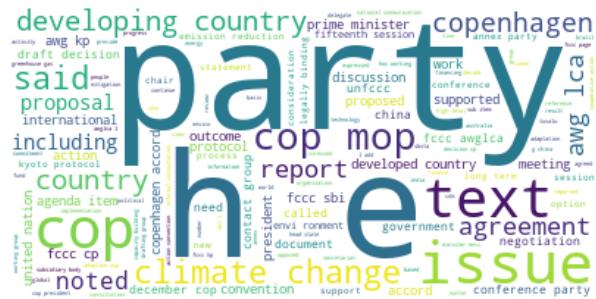
Key words of COP14 are climate change, agenda, item, nation, Kyoto protocol.

The topic one focusses on session, minister, conference, development, item, statement, term, country, period, cooperative, action. It indicates that a statement requesting countries to cooperate together and take actions.

The topic two focusses on agenda, convention, item, report, matter, draft, session, action, country, government, financial, resource, statement. It shows that an item requests countries and their governments take actions on the resources and the financial aspect.

The topic three focusses on climate, environment, decision, forest, conclusion, implementation, protocol, commitment, technology, issue. This topic may emphasize the relationship among climate, environment, and forests. Besides, it also discusses about the protocol implementation and issues on the aspect of the forests.

COP15:



Key words of COP15 are party, text, agreement, issue, outcome. Besides, there are some single letters appear at the Word Cloud, which means that PDF reader cannot read some files.

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feature of d1:
['19', '1990', '20', '2020', 'accord', 'action', 'agreement', 'carbon', 'change', 'china', 'climate', 'co2e', 'conference', 'copenhagen', 'country', 'cut', 'emission',
bal', 'government', 'india', 'international', 'level', 'meeting', 'nation', 'people', 'said', 'state', 'summit', 'united', 'world']

feature of d2:
['2009', 'action', 'adoption', 'agenda', 'background', 'body', 'ccc', 'cmp', 'conference', 'consideration', 'convention', 'cop', 'cp', 'decision', 'draft', 'fcc',
th', 'invited', 'item', 'meeting', 'onal', 'ons', 'party', 'pr', 'report', 'sbi', 'sbst', 'secretariat', 'session', 'th']

feature of d3:
['11', '11', '2009', 'add', 'agenda', 'convention', 'cop', 'cp', 'december', 'decision', 'envi', 'fccc', 'gr', 'item', 'meeting', 'minister', 'mm', 'nation', 'page',
'y', 'pr', 'president', 'prime', 'report', 'ronment', 'sbi', 'session', 'statement', 'th', 'united']

feature of d4:
['accord', 'action', 'awg', 'body', 'change', 'climate', 'conference', 'cop', 'copenhagen', 'country', 'developing', 'government', 'group', 'high', 'hoc', 'included',
'kyoto', 'kyoto', 'level', 'long', 'mechanism', 'needed', 'negotiating', 'negotiation', 'organization', 'party', 'protocol', 'session', 'temperature', 'term']

feature of d5:
['agreement', 'bank', 'change', 'climate', 'copenhagen', 'country', 'cut', 'danish', 'developing', 'document', 'draft', 'emission', 'emit', 'hand', 'kyoto', 'leader',
ed', 'nation', 'poor', 'protocol', 'rich', 'role', 'run', 'said', 'sideline', 'talk', 'text', 'understood', 'week', 'world']

feature of d6:
['accord', 'action', 'agreement', 'change', 'climate', 'conference', 'convention', 'cop', 'copenhagen', 'country', 'day', 'decision', 'developed', 'developing', 'emiss',
finance', 'goal', 'government', 'group', 'including', 'kyoto', 'leader', 'mitigation', 'new', 'party', 'political', 'president', 'support', 'term', 'year']

feature of d7:
['2009', 'adopted', 'annex', 'awg', 'chair', 'conclusion', 'cop', 'copenhagen', 'country', 'december', 'decision', 'developed', 'developing', 'draft', 'emission', 'fccc',
group', 'issue', 'kp', 'mop', 'noted', 'party', 'plenary', 'protocol', 'report', 'said', 'sbi', 'sbsta', 'text', 'work']

feature of d8:
['15th', '18', '2009', 'adaptation', 'agreement', 'change', 'climate', 'conference', 'cop15', 'copenhagen', 'december', 'health', 'human', 'impact', 'meeting', 'nation',
policy', 'poor', 'population', 'precious', 'protecting', 'protocol', 'reduce', 'reference', 'relation', 'represents', 'sector', 'united', 'want', 'world']

feature of d9:
['15', 'anthropogenic', 'change', 'climate', 'co2', 'concerning', 'conference', 'consequence', 'cop', 'country', 'developing', 'economic', 'emission', 'energy', 'enviro',
tal', 'fuel', 'including', 'large', 'meeting', 'nation', 'national', 'need', 'nuclear', 'observer', 'organization', 'person', 'power', 'production', 'technology', 'unfccc']

feature of d10:

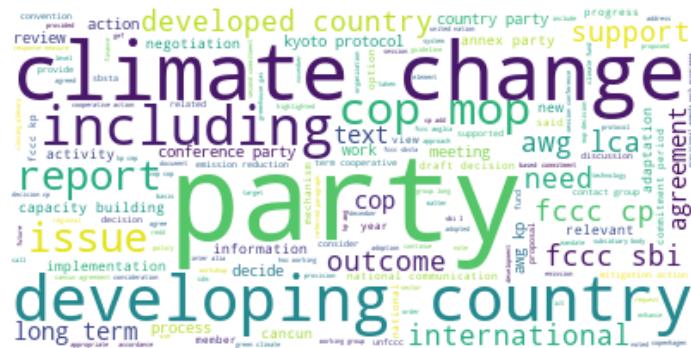
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The topic one focusses on decision, report, emission, conference, draft, outcome, including, technology, implementation, plenary. It shows the implementation of emission standards and to use technology reducing emissions.

Main words of topic two are session action, agenda, item, conclusion, document, consultant, government, statement, commitment. It seems to talk the content of the conference.

The topic three focusses on climate, minister, issue, annex, agreement, protocol, discussion, negotiation, mechanism, mitigation, financial. The topic seems to show the discussion on the financial aspect and the negotiation on the fund for mitigation of the climate change.

COP16



Key words of COP16 are climate change, party, developing country, report, issue.

```
["2010", "action", "adaptation", "agreement", "change", "climate", "commitment", "committee", "conference", "convention", "country", "emission", "framework", "fund", "global", "green", "greenhouse", "international", "kyoto", "nation", "network", "party", "protocol", "recognizes", "reduce", "session", "shall", "technology", "year"]
feature of d2:
["10", "11", "16", "2009", "2010", "action", "ad", "adoption", "agenda", "background", "cmp", "conference", "convention", "cop", "cp", "decision", "draft", "fccc", "gr", "invited", "item", "note", "paragraph", "party", "provisional", "report", "sbi", "se", "secretariat", "session"]
feature of d3:
["action", "adaptation", "appropriate", "building", "capacity", "climate", "conference", "convention", "country", "cp", "decides", "decision", "developing", "developed", "implementation", "including", "member", "mitigation", "national", "no", "need", "paragraph", "party", "referred", "relevant", "shall", "support", "technology", "term"]
feature of d4:
["action", "adaptation", "agreed", "agreement", "body", "cancun", "carbon", "change", "climate", "conference", "convention", "country", "degree", "develop", "developing", "emission", "verbal", "hot", "kyoto", "low", "maximum", "meeting", "organization", "party", "protocol", "reduction", "response", "rise", "session", "technology", "temperature"]
feature of d5:
["10", "2010", "cancun", "change", "climate", "conference", "convention", "december", "document", "dr", "flood", "gideon", "global", "human", "increase", "medium", "mer", "mexico", "nation", "organic", "pakistan", "pdf", "planet", "pop", "presented", "press", "release", "safe", "study", "video"]
feature of d6:
["accord", "action", "agreement", "binding", "cancun", "change", "climate", "conference", "convention", "cop", "copenhagen", "country", "decision", "developed", "developing", "emission", "finance", "kyoto", "mitigation", "national", "new", "outcome", "party", "pledge", "process", "support", "target", "technology", "unfccc", "year"]
feature of d7:
["change", "climate", "communication", "conference", "cop", "copis", "country", "delegate", "developing", "emission", "environment", "framework", "help", "ict", "icts", "important", "information", "itu", "look", "member", "membership", "plan", "provide", "reduce", "role", "saving", "sector", "solution", "technology", "win"]
feature of d8:
["activity", "application", "change", "climate", "conference", "country", "developing", "development", "disaster", "effect", "emission", "energy", "ghg", "group", "ict", "itsu", "level", "order", "radiocommunication", "reduction", "relevant", "resolution", "role", "sector", "study", "telecommunication", "telecommunications", "use", "id"]
feature of d9:
["2010", "adopted", "agreement", "annex", "awg", "cancun", "climate", "commitment", "conclusion", "cop", "country", "december", "decision", "developing", "fccc", "group", "issue", "kp", "lca", "mop", "outcome", "party", "plenary", "protocol", "report", "sbi", "sbsta", "technology", "text", "work"]
```

The topic one focusses on country, climate, developing, technology, agreement, conference, protocol, commitment, term, conclusion, reduction, forest. The topic shows that there are agreements on the technology helps to some countries to help them reduce climate change and protect forest.

The topic two focusses on action, decision, emission, issue, annex, development, implementation, draft, consideration, request. Countries should take actions to reduce emissions and how the implementation goes.

The topic three focusses on report, session, mitigation, decision, global, outcome, fund, negotiation, measure. There are negotiations on funds for global warming mitigations and measurement.

COP17:



Key words of COP17 are report, commitment, Kyoto protocol, issue, decision.

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feature of d1:  
['11', '2015', 'action', 'agreement', 'binding', 'change', 'china', 'climate', 'conference', 'convention', 'country', 'developing', 'durban', 'framework', 'fund', 'gas  
global', 'greenhouse', 'india', 'kyoto', 'nation', 'negotiation', 'poor', 'proposal', 'protocol', 'said', 'term', 'treaty', 'united', 'warming']  
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feature of d2:  
['16', '17', '2011', 'action', 'adoption', 'agenda', 'article', 'background', 'cmp', 'conference', 'convention', 'cop', 'cp', 'decision', 'draft', 'fccc', 'group', 'in  
d', 'item', 'note', 'paragraph', 'party', 'proposal', 'provisional', 'report', 'sbi', 'secretariat', 'session', 'seventeenth', 'th']  
-----  
feature of d3:  
['2011', 'ad', 'cc', 'cop', 'cp', 'er', 'esident', 'fc', 'fccc', 'fo', 'ite', 'ma', 'mb', 'meeti', 'mi', 'mini', 'mr', 'na', 'nd', 'ng', 'nt', 'proposal', 'sb', 'se',  
'state', 'ster', 'th', 've', 'wo']  
-----  
feature of d4:  
['2020', 'agreed', 'agreement', 'binding', 'cancún', 'climate', 'commitment', 'cop', 'country', 'decision', 'developed', 'developing', 'durban', 'emission', 'finance',  
d', 'instrument', 'issue', 'kyoto', 'legal', 'mitigation', 'new', 'outcome', 'party', 'process', 'protocol', 'second', 'target', 'unfccc', 'year']  
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feature of d5:  
['2011', 'adaptation', 'adopted', 'annex', 'awg', 'climate', 'cmp', 'commitment', 'convention', 'cop', 'country', 'december', 'decision', 'developing', 'emission', 'fco  
group', 'issue', 'kp', 'kyoto', 'party', 'period', 'plenary', 'process', 'protocol', 'report', 'said', 'sbi', 'sbsta', 'work']  
-----  
feature of d6:  
['10', '2012', 'africa', 'agreement', 'binding', 'change', 'climate', 'commitment', 'conference', 'cop17', 'country', 'cut', 'deal', 'developing', 'durban', 'emission',  
obal', 'hope', 'kyoto', 'money', 'november', 'pacja', 'protocol', 'rich', 'said', 'south', 'summit', 'talk', 'world', 'year']  
-----  
feature of d7:  
['17', 'change', 'climate', 'committee', 'conference', 'convention', 'cop', 'country', 'demonstration', 'department', 'energy', 'event', 'framework', 'ghg', 'hosting',  
ernal', 'international', 'kyoto', 'level', 'logistics', 'main', 'meeting', 'nation', 'party', 'project', 'protocol', 'sector', 'unfccc', 'united', 'work']  
-----  
feature of d8:  
['17', '2011', 'canada', 'change', 'climate', 'commitment', 'conference', 'cop', 'country', 'december', 'durban', 'emission', 'enhanced', 'establish', 'federal', 'finan  
g', 'government', 'international', 'kyoto', 'legally', 'limit', 'meeting', 'new', 'party', 'protocol', 'session', 'signed', 'south', 'world', 'year']  
-----  
feature of d9:  
['02', 'action', 'africa', 'canada', 'climate', 'country', 'developed', 'durban', 'global', 'large', 'leader', 'leadership', 'longer', 'mckinnon', 'meaningful', 'moment  
need', 'negotiation', 'network', 'outcome', 'pariah', 'people', 'political', 'positive', 'poster', 'share', 'south', 'space', 'talk', 'understand']
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The topic one focusses on protocol, issue, change, agenda, period, item, agreement,

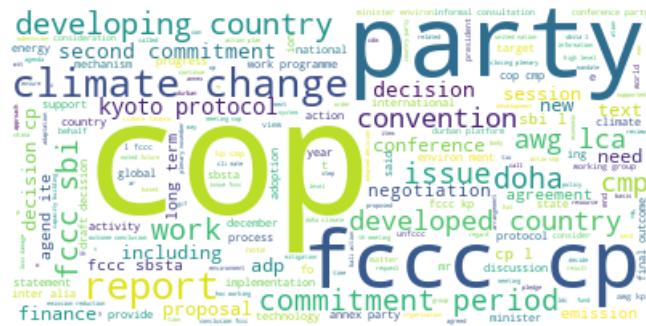
consideration. It may talk the protocol period and the issue, item, agreement.

The topic two focusses on decision, climate, report, convention, proposal, draft, action,

outcome, environment. It focusses on the discussion about the environment.

The topic three focusses on country, session, commitment, annex, adaption, emission, process, support, procedure. It talks that the countries should take actions and take plans on emission reduction .

COP18:



Key words of COP18 are climate change, Kyoto protocol, convention, developed country, issue, developing country.

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feature of d1:
['2012', 'action', 'agreement', 'carbon', 'change', 'climate', 'conference', 'convention', 'country', 'damage', 'developed', 'emission', 'global', 'government', 'group',
'yoto', 'loss', 'meeting', 'nation', 'new', 'november', 'party', 'protocol', 'session', 'state', 'unfccc', 'united', 'working', 'world', 'zealand']

feature of d2:
[['16', '17', '2012', 'actio', 'ad', 'cc', 'cop', 'cp', 'decision', 'er', 'fc', 'fccc', 'fo', 'le', 'ma', 'na', 'nd', 'ng', 'nt', 'party', 'report', 'sb', 'se', 'ssio',
't', 'te', 'th', 'tio', 've', 'wo']]

feature of d3:
[['12', '18', '20', '2012', 'agend', 'al', 'ation', 'convention', 'cop', 'cp', 'decision', 'ed', 'environ', 'esident', 'fccc', 'ion', 'ite', 'meeting', 'ment', 'minister',
'mr', 'par', 'party', 'pr', 'report', 'sbi', 'sbsta', 'session', 'state', 'th']]

feature of d4:
[['2012', 'adaptation', 'annex', 'awg', 'chair', 'climate', 'cmp', 'commitment', 'cop', 'country', 'december', 'decision', 'developing', 'doha', 'fccc', 'finance', 'group',
'issue', 'kp', 'lca', 'outcome', 'party', 'period', 'plenary', 'protocol', 'report', 'sbi', 'sbsta', 'second', 'work']]

feature of d5:
[['2020', 'action', 'agreed', 'agreement', 'climate', 'commitment', 'cop', 'country', 'decision', 'developed', 'developing', 'doha', 'durban', 'emission', 'finance', 'financ',
'issu', 'mechanism', 'negotiation', 'new', 'party', 'period', 'platform', 'protocol', 'second', 'state', 'target', 'track', 'united', 'year']]

feature of d6:
[['2012', 'adaptation', 'aid', 'carbon', 'change', 'climate', 'country', 'development', 'director', 'effectiveness', 'event', 'finance', 'financial', 'financing', 'green',
'infrastructure', 'institutional', 'international', 'investment', 'investor', 'low', 'market', 'mechanism', 'november', 'oecd', 'policy', 'private', 'resilient', 'role',
'rk']]

feature of d7:
[['ac', 'ad', 'ant', 'ar', 'change', 'climat', 'col', 'commit', 'count', 'ed', 'emission', 'er', 'eu', 'hat', 'ing', 'ion', 'ke', 'kyoto', 'le', 'ly', 'ment', 'mit',
'ne', 'negot', 'ohai', 'proto', 'rom', 'st', 'ye']]

feature of d8:
[['2020', 'action', 'change', 'climate', 'commitment', 'conference', 'convention', 'cop', 'country', 'damage', 'decision', 'developed', 'developing', 'doha', 'durban',
'ision', 'finance', 'group', 'including', 'issue', 'kyoto', 'new', 'party', 'period', 'plan', 'platform', 'protocol', 'technology', 'term', 'united']]

feature of d9:
[['2020', 'action', 'agreement', 'carbon', 'change', 'climate', 'commitment', 'conference', 'cop', 'country', 'developing', 'development', 'doha', 'durban', 'emission',
'gy', 'eu', 'global', 'having', 'international', 'member', 'need', 'new', 'note', 'order', 'party', 'policy', 'regard', 'stress', 'technology']]

```

Key words of topic one is climate, energy, issue, commitment, fund, agreement, term, annex, negotiation, support, economic, stress. It discusses the economic problem on climate change and the economic stress to use new energy.

Key words of topic two is country, decision, action, policy, outcome, plenary. It seems to talk the decisions of countries.

The topic three focusses on emission, report, session, technology, development, protocol, financial, draft, reduction, resource. It indicates that to reduce emission through the technology and resource aspect.

COP19:



Key words of COP19 are decision, agenda, developing country, issue, Warsaw, developed country.

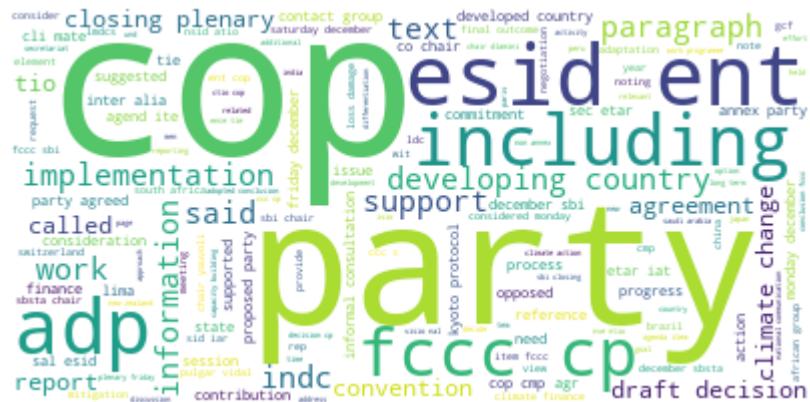
```
'feature of d1:  
['11', '2013', 'agreement', 'billion', 'carbon', 'change', 'climate', 'commitment', 'conference', 'country', 'damage', 'delegate', 'developing', 'discussion', 'emission  
energy', 'gas', 'global', 'industrialised', 'international', 'korolec', 'minister', 'nation', 'november', 'poland', 'state', 'talk', 'unfccc', 'united', 'warsaw']  
  
'feature of d2:  
['10', '19', '20', '2013', 'agenda', 'behalf', 'climate', 'conference', 'convention', 'cop', 'cp', 'decision', 'draft', 'fccc', 'item', 'meeting', 'mn', 'nd', 'paragraph  
party', 'president', 'programme', 'proposal', 'report', 'sbi', 'sbsta', 'session', 'statement', 'th', 'work']  
  
'feature of d3:  
['ac', 'ad', 'ap', 'ar', 'atio', 'cc', 'ce', 'cop', 'cp', 'ec', 'ed', 'ep', 'er', 'fo', 'gn', 'io', 'le', 'nd', 'ng', 'nt', 'ro', 'sb', 'sec', 'te', 'th', 'tie', 'tio',  
've', 'wo']  
  
'feature of d4:  
['11', '2013', 'adaptation', 'adopted', 'adp', 'agreement', 'annex', 'climate', 'cmp', 'conclusion', 'consultation', 'cop', 'country', 'decision', 'developing', 'discus-  
sion', 'fccc', 'finance', 'group', 'issue', 'item', 'need', 'november', 'outcome', 'party', 'plenary', 'report', 'sbi', 'sbsta', 'work']  
  
'feature of d5:  
['agreement', 'change', 'climate', 'commitment', 'conference', 'contribution', 'convention', 'cop', 'country', 'damage', 'decision', 'developed', 'developing', 'dif-  
ference', 'durban', 'finance', 'intended', 'international', 'issue', 'legal', 'loss', 'mechanism', 'new', 'outcome', 'paris', 'party', 'state', 'united', 'warsaw', 'year']  
  
'feature of d6:  
['2013', 'action', 'building', 'capacity', 'change', 'city', 'climate', 'common', 'conference', 'cop19', 'country', 'date', 'day', 'developed', 'event', 'global', 'in-  
ternational', 'ldcs', 'national', 'needed', 'negotiation', 'november', 'private', 'range', 'resilience', 'summit', 'talk', 'warsaw', 'workshop']  
  
'feature of d7:  
['2015', 'action', 'address', 'agenda', 'ashe', 'assembly', 'change', 'climate', 'cop19', 'country', 'damage', 'development', 'extraction', 'general', 'global', 'idea',  
'international', 'issue', 'loss', 'nation', 'pollution', 'post', 'president', 'question', 'region', 'representation', 'segment', 'society', 'united', 'youth']  
  
'feature of d8:  
['action', 'adaptation', 'change', 'climate', 'commitment', 'conference', 'contribution', 'convention', 'cop', 'country', 'damage', 'decision', 'developed', 'developing  
durban', 'finance', 'fund', 'international', 'issue', 'legal', 'loss', 'mechanism', 'negotiation', 'new', 'para', 'party', 'platform', 'term', 'warsaw', 'year']  
  
'feature of d9:  
['11', 'action', 'activity', 'change', 'climate', 'cop19', 'discussion', 'enhanced', 'environment', 'europe', 'european', 'event', 'global', 'health', 'mitigation', 'n-  
oil', 'needed', 'new', 'november', 'organized', 'panel', 'people', 'place', 'poland', 'process', 'public', 'raising', 'related', 'sector', 'strong']
```

The topic one focusses on climate, agenda, issue, work, finance, draft, implementation, new, statement, technology. It seems to ask the implementation of the technology help statement to reduce the emission.

The topic two focusses on country, item, conclusion, agreement, outcome, decision. It seems to show the result of the conference.

Key words of topic three is decision, convention, session, consultant, fund, review, loss, protocol. It seems to talk the fund issue.

COP20:



Key words of COP20 are support, developing country, implementation, information.

feature of d1:
['2014', 'change', 'climate', 'conference', 'country', 'emission', 'global', 'greenhouse', 'held', 'increase', 'increased', 'ki', 'kyoto', 'legally', 'level', 'lima', 'meeting', 'nation', 'negotiation', 'oil', 'paris', 'party', 'producing', 'protocol', 'session', 'temperature', 'unfccc', 'union', 'united']-----

feature of d2:
['2015', 'action', 'adaptation', 'agreement', 'change', 'climate', 'cop', 'country', 'developed', 'developing', 'emission', 'fund', 'government', 'green', 'including', 'international', 'launched', 'lima', 'national', 'new', 'paris', 'peru', 'plan', 'president', 'said', 'support', 'technology', 'unfccc', 'year']-----

feature of d3:
['ad', 'agend', 'ar', 'cc', 'cop', 'cp', 'ec', 'ed', 'ent', 'ep', 'er', 'esid', 'fc', 'fo', 'gr', 'io', 'ite', 'ma', 'mee', 'mr', 'nd', 'nt', 'sb', 'te', 'th', 'ti', 'ub', 'ur', 'wo']-----

feature of d4:
['ac', 'ad', 'ap', 'ar', 'atiao', 'cc', 'ce', 'cop', 'cp', 'ec', 'ed', 'ep', 'er', 'fo', 'io', 'le', 'nal', 'nd', 'ng', 'nt', 'ro', 'sb', 'sec', 'te', 'th', 'tie', 'tio', 've', 'wo']-----

feature of d5:
['00', '01', '13', '20', '2014', '2015', 'agreed', 'agreement', 'cañete', 'cet', 'change', 'china', 'climate', 'cmp', 'commissioner', 'conference', 'contribution', 'cop', 'december', 'eu', 'global', 'greenhouse', 'international', 'lima', 'paris', 'party', 'reduction', 'session', 'target', 'today']-----

feature of d6:
['2014', '2015', 'action', 'adaptation', 'adp', 'agreement', 'annex', 'chair', 'climate', 'cmp', 'convention', 'cop', 'country', 'december', 'decision', 'draft', 'fcc', 'roup', 'indcs', 'information', 'item', 'mitigation', 'party', 'proposed', 'report', 'review', 'sbi', 'sbsta', 'text', 'work']-----

feature of d7:
['2014', 'catalonia', 'change', 'climate', 'conference', 'convention', 'cop20', 'country', 'december', 'delegation', 'diplomatic', 'forest', 'framework', 'global', 'go', 'government', 'governor', 'group', 'international', 'lima', 'member', 'nation', 'observer', 'party', 'region', 'share', 'state', 'summit', 'united', 'year']-----

feature of d8:
['2014', '2015', 'change', 'climate', 'cop20', 'crescent', 'cross', 'day', 'development', 'discus', 'end', 'environment', 'extreme', 'generation', 'global', 'goal', 'in', 'ute', 'international', 'lead', 'lima', 'negotiation', 'overseas', 'peru', 'poverty', 'red', 'set', 'sustainable', 'time', 'world', 'zero']-----

feature of d9:
['200', '2020', 'action', 'climate', 'contribution', 'cop20', 'indcs', 'intended', 'key', 'lima', 'message', 'mitigation', 'monitored', 'namas', 'nationally', 'nearly', 'ed', 'negotiating', 'negotiation', 'partnership', 'party', 'post', 'pre', 'priority', 'slocat', 'sustainable', 'time', 'tracking', 'transfer', 'transport']-----

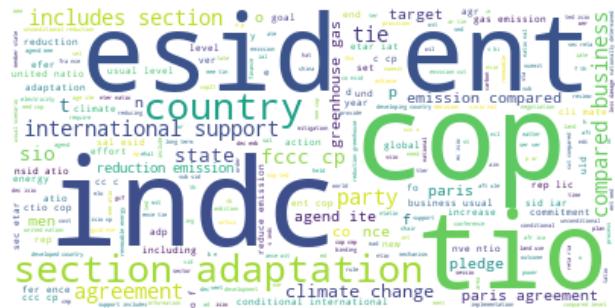
feature of d10:

The topic one focusses on climate, decision, adaption, developing, review.

The topic two focusses on action, implementation, outcome, session, consideration, support, element. It seems to talk the consideration and the elements of Paris agreement.

The topic three focusses on country, agreement, report, support, draft, finance, mechanism.

COP21:



There are some weird words in Word Cloud, which may lead by the PDF reader. But there are still some key words there, such as country, emission, support, adaption, agreement.

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feature of d1:
['12', '2015', 'action', 'agreement', 'called', 'carbon', 'change', 'climate', 'commitment', 'conference', 'country', 'declaration', 'effort', 'emission', 'gas', 'global', 'goal', 'greenhouse', 'indigenous', 'nation', 'paris', 'party', 'people', 'reduce', 'state', 'summit', 'target', 'united', 'warming', 'world']

feature of d2:
['ad', 'agend', 'ap', 'ar', 'cop', 'cp', 'ec', 'ed', 'ent', 'ep', 'er', 'esid', 'fo', 'gr', 'io', 'ite', 'le', 'ma', 'mee', 'nd', 'ng', 'nt', 'rep', 'te', 'th', 'ti', 'e', 'ub', 'ur', 'wo']

feature of d3:
['ac', 'ad', 'ap', 'ar', 'atio', 'cc', 'ce', 'cop', 'ctio', 'ec', 'ed', 'ee', 'ep', 'er', 'fo', 'io', 'isio', 'le', 'nd', 'nt', 'ro', 'sb', 'sec', 'te', 'th', 'ti', 'tio', 'ur', 've']

feature of d4:
['2030', '55', 'action', 'agreed', 'agreement', 'available', 'change', 'city', 'climate', 'commitment', 'contribution', 'country', 'determined', 'effort', 'emission', 'global', 'goal', 'impact', 'key', 'linken', 'member', 'nationally', 'ndc', 'need', 'paris', 'party', 'reduce', 'support', 'transparency']

feature of d5:
['2015', '2020', 'action', 'adaptation', 'agreement', 'change', 'climate', 'commitment', 'conference', 'context', 'development', 'emission', 'eu', 'finance', 'global', 'lementation', 'importance', 'including', 'member', 'mitigation', 'need', 'order', 'paris', 'party', 'provide', 'state', 'stress', 'sustainable', 'underline', 'unfccc']

feature of d6:
['agreement', 'binding', 'change', 'climate', 'commitment', 'committed', 'conference', 'contribution', 'cop21', 'country', 'developing', 'differentiated', 'effort', 'er', 'financial', 'gas', 'global', 'greenhouse', 'increase', 'level', 'national', 'need', 'new', 'paris', 'reduce', 'reducing', 'state', 'supporting', 'universal', 'year']

feature of d7:
['2015', '21', 'change', 'city', 'climate', 'conference', 'convention', 'cop', 'cop21', 'framework', 'frequently', 'habitat', 'included', 'input', 'interference', 'international', 'ipcc', 'kyoto', 'leading', 'member', 'membership', 'nation', 'objective', 'observer', 'party', 'rio', 'state', 'unfccc', 'united', 'universal']

feature of d8:
['agriculture', 'challenge', 'change', 'climate', 'community', 'conference', 'cop21', 'country', 'data', 'deforestation', 'development', 'disruption', 'energy', 'expert', 'food', 'gret', 'interview', 'issue', 'management', 'natural', 'paris', 'position', 'sheet', 'society', 'solution', 'type', 'united', 'urban', 'world', 'year']

feature of d9:
['10', '11', '15', '2015', '2025', '2030', '30', 'adaptation', 'business', 'carbon', 'compared', 'conditional', 'cut', 'emission', 'energy', 'gas', 'greenhouse', 'incus', 'increase', 'indc', 'international', 'level', 'pledge', 'reduce', 'reduction', 'section', 'support', 'target', 'unconditional', 'usual']

feature of d10:

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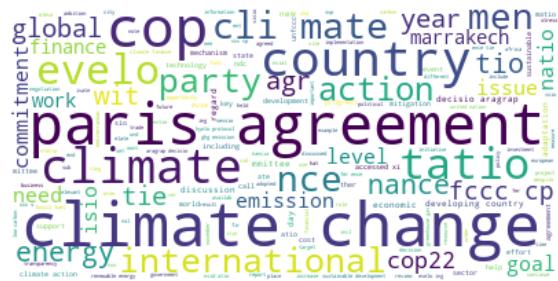
The topic one focusses on emission, agreement, adaption, support, business, conditional, target. It seems to tell the agreement related to the emission target of the conference

The topic two focusses on reduction, Paris agreement, draft, country, which shows the content of the Paris agreement.

The topic three focusses on climate, country, reduce, energy, carbon, which shows that the countries should reduce carbon emission and find new energy.

There are weird letters appearing there, which interfere the result of the topic modelling.

COP22:



Key Words of COP22 are country, Marrakech, Paris agreement, climate change, emission.

```

feature of d1:
['2016', '2016', 'action', 'agreement', 'aim', 'annex', 'business', 'change', 'climate', 'conference', 'convention', 'cop22', 'country', 'emission', 'gas', 'global', 'green', 'increase', 'infrastructure', 'nation', 'november', 'observer', 'organization', 'panel', 'paris', 'party', 'protocol', 'sustainable', 'united']

feature of d2:
['atatio', 'ccc', 'ciate', 'cli', 'cp', 'elate', 'eleva', 'ence', 'evelo', 'fccc', 'feren', 'fina', 'iennial', 'illio', 'isio', 'ivate', 'mate', 'matio', 'men', 'ment', 'ee', 'mmittee', 'nance', 'natio', 'ncial', 'tatio', 'then', 'tie', 'tio', 'vites']

feature of d3:
['agn', 'aragrap', 'atio', 'ccc', 'cop', 'cp', 'ctio', 'decisio', 'efer', 'esid', 'etar', 'evie', 'fccc', 'fo', 'iate', 'isio', 'level', 'matio', 'mmittee', 'natio', 'rd', 'sessio', 'state', 'tatio', 'title', 'tie', 'tio', 'uested', 'visio', 'wil']

feature of d4:
['2018', 'action', 'adaptation', 'agreed', 'agreement', 'climate', 'conference', 'continue', 'cop', 'cop22', 'country', 'discussion', 'document', 'future', 'goal', 'ico', 'issue', 'key', 'long', 'marrakech', 'negotiation', 'outcome', 'paris', 'place', 'pledge', 'process', 'set', 'talk', 'term', 'year']

feature of d5:
['2016', 'action', 'agreement', 'carbon', 'change', 'climate', 'commission', 'commitment', 'country', 'effort', 'emission', 'energy', 'eu', 'european', 'ghg', 'global', 'al', 'having', 'importance', 'international', 'member', 'need', 'paris', 'party', 'reduction', 'regard', 'resource', 'sector', 'state', 'stress']

feature of d6:
['action', 'africa', 'agreement', 'change', 'city', 'climate', 'cop', 'country', 'day', 'decision', 'development', 'discussion', 'emission', 'energy', 'finance', 'framk', 'global', 'international', 'issue', 'mechanism', 'mitigation', 'ndcs', 'new', 'paris', 'party', 'place', 'project', 'sustainable', 'work', 'year']

feature of d7:
['00', '11', '15', '16', '30', 'action', 'adaptation', 'bleu', 'change', 'climate', 'coastal', 'convention', 'cop22', 'development', 'event', 'framework', 'green', 'inive', 'map', 'mediterranean', 'november', 'opportunity', 'party', 'plan', 'region', 'regional', 'risk', 'session', 'sustainable', 'zone']

feature of d8:
['12', 'change', 'climate', 'cop22', 'cost', 'country', 'developing', 'development', 'diversification', 'economic', 'event', 'good', 'help', 'impact', 'important', 'international', 'itc', 'key', 'market', 'measure', 'nation', 'november', 'paris', 'role', 'said', 'sustainable', 'technology', 'trade', 'united', 'wto']

feature of d9:
['2015', '2016', '22', 'accessed', 'action', 'adaptation', 'agreement', 'change', 'climate', 'commitment', 'cop', 'country', 'development', 'elcano', 'emission', 'energ', 'finance', 'gap', 'global', 'international', 'paris', 'policy', 'report', 'review', 'stern', 'unep', 'unfccc', 'world', 'xi', 'year']

feature of d10:

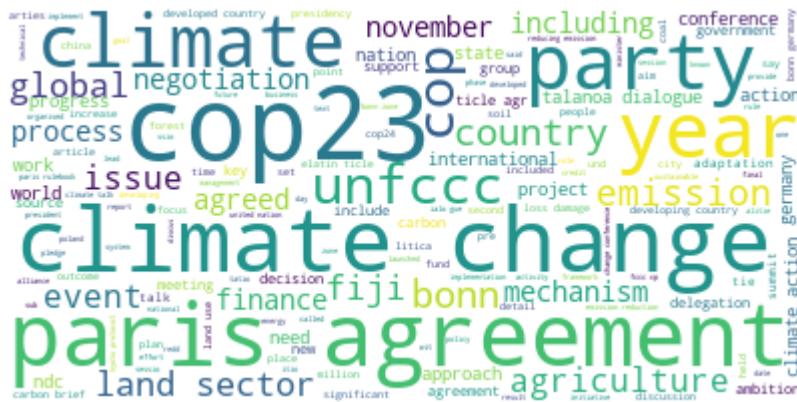
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The topic one focusses on Paris agreement, emission, development, finance, policy, framework, economic, fund, carbon, which shows the economic policy and issues about Paris agreement.

The topic two focusses on action, energy, global, sustainable, commitment, year, Marrakech, decision, issue, discussion, green, which indicates that to take actions on energy aspect to keep sustainable development.

The topic three focusses on climate, country, finance, review, cost, market, mechanism, technology, support, agreement. It asks the technology and fund helps from developed countries to developing countries.

COP23:



Key words of COP23 are climate change, Paris agreement, country, negotiation.

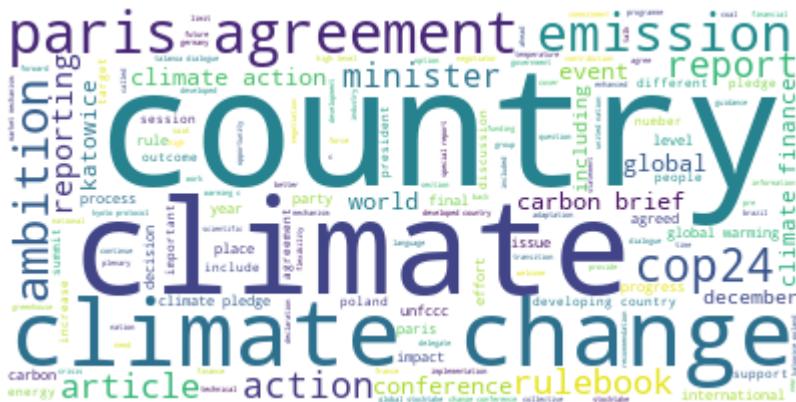
Besides, at the feature attraction part for every article, the PDF file is read into a wrong format, which course the failure of the PDF file feature attraction.

The topic one focusses on country, Bonn, year, carbon, dialogue, agriculture, finance, process, framework, contribution, significant. It seems to talk about the framework related to agriculture aspect.

The topic two focusses on Paris, emission, global, nation, issue, need, progress, government, implementation, support, discussion, detail. The countries and their government discuss about the implementation, detail and outline about the Paris agreement.

The topic three focusses on climate, agreement, action, Germany, negotiation, mechanism, delegation, approach, reduction, fund, Paris. It indicates that there is a negotiation on fund for Paris agreement by many delegations.

COP24:



Key words of COP24 are country, climate change, Paris agreement, emission.

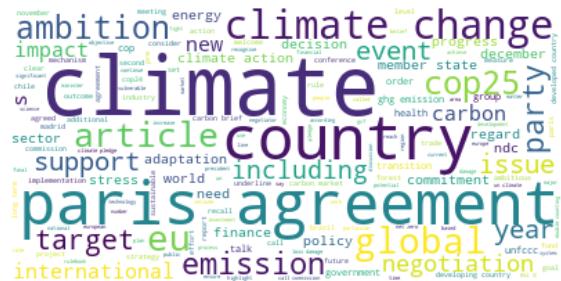
```
feature of d1:  
['15', '2018', 'action', 'agreement', 'carbon', 'change', 'climate', 'cma1', 'conference', 'cop24', 'country', 'day', 'december', 'emission', 'energy', 'event', 'fund',  
'global', 'held', 'katowice', 'nation', 'paris', 'party', 'pledged', 'report', 'special', 'unfccc', 'united', 'warming', 'world']  
-----  
feature of d2:  
['action', 'agreed', 'agreement', 'ambition', 'article', 'brief', 'carbon', 'change', 'climate', 'cop24', 'country', 'decision', 'developing', 'dialogue', 'emission',  
'finace', 'global', 'issue', 'mechanism', 'paris', 'pledge', 'poland', 'progress', 'report', 'reporting', 'rule', 'rulebook', 'stocktake', 'world']  
-----  
feature of d3:  
['24', 'action', 'agreement', 'carbon', 'change', 'climate', 'community', 'conference', 'country', 'emission', 'global', 'greenhouse', 'including', 'initiative', 'katowice',  
'level', 'limit', 'nation', 'paris', 'people', 'programme', 'scientific', 'sirajganj', 'summit', 'temperature', 'treaty', 'unfccc', 'united', 'warming', 'world']  
-----  
feature of d4:  
['2020', 'agreement', 'ambition', 'change', 'climate', 'costa', 'country', 'deliver', 'deputy', 'effort', 'enhanced', 'global', 'goal', 'government', 'impact', 'include',  
'increase', 'long', 'minister', 'paris', 'report', 'response', 'sergio', 'special', 'stakeholder', 'statement', 'strengthen', 'summit', 'term', 'warming']  
-----  
feature of d5:  
['24', 'action', 'agreement', 'change', 'climate', 'conference', 'cop', 'coverage', 'december', 'dialogue', 'event', 'finance', 'forum', 'group', 'held', 'high', 'hub',  
'implementation', 'include', 'industry', 'international', 'katowice', 'knowledge', 'level', 'paris', 'party', 'roundtable', 'sdg', 'session', 'work']  
-----  
feature of d6:  
['action', 'agreement', 'aim', 'ambition', 'calling', 'climate', 'coalition', 'conference', 'cop24', 'country', 'december', 'developed', 'developing', 'eu', 'group', 'high',  
'highest', 'international', 'katowice', 'level', 'number', 'paris', 'partner', 'possible', 'released', 'sharing', 'statement', 'talk', 'today', 'world']  
-----  
feature of d7:  
['adoption', 'agreement', 'article', 'body', 'change', 'climate', 'committee', 'conference', 'convention', 'decision', 'en', 'facility', 'finance', 'fourth', 'held',  
'mentationof', 'matter', 'mechanism', 'organization', 'paris', 'party', 'proposal', 'relating', 'report', 'reporting', 'reportof', 'session', 'statement', 'subsidiary',  
'nology']
```

The key word of topic one is country, Paris, report, pledge, rulebook, developing, support, ambition. It shows the ambitions of countries on Paris agreement and makes a rulebook.

The topic two focusses on climate, carbon, emission, ambition, finance, reporting, progress, energy, issue, decision, outcome, target, implementation. It shows that the conference needs to adopt a set of decisions on emission finance and energy aspect and set a target to ensure the full implementation of the Paris Agreement.

The topic three focusses on agreement, global warming, impact, process, discussion, technical, limit. It shows that there is a discussion about provide financial and technology helps to poor countries to reduce global warming.

COP25:



Key words of COP25 are climate change, Paris agreement, country, target, negotiation, emission, issue.

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feature of d1:
['2019', 'action', 'activist', 'agreement', 'change', 'chile', 'climate', 'conference', 'cop25', 'country', 'decision', 'emission', 'event', 'government', 'indigenous', 'international', 'kyoto', 'madrid', 'meeting', 'nation', 'negotiation', 'november', 'paris', 'party', 'protocol', 'scientist', 'spain', 'united', 'world', 'zone']

feature of d2:
['25', 'action', 'change', 'chile', 'climate', 'conference', 'convene', 'convention', 'cop', 'december', 'event', 'held', 'high', 'include', 'informed', 'knowledge', 'n', 'level', 'meeting', 'november', 'ocean', 'party', 'place', 'platform', 'pre', 'second', 'session', 'special', 'unfccc', 'water']

feature of d3:
['2020', 'action', 'agreed', 'agreement', 'ambition', 'article', 'brief', 'carbon', 'climate', 'cop25', 'country', 'damage', 'decision', 'emission', 'final', 'finance', 'oup', 'issue', 'madrid', 'nation', 'negotiator', 'paris', 'party', 'progress', 'report', 'support', 'target', 'world', 'year']

feature of d4:
['2019', 'action', 'agreement', 'carbon', 'change', 'climate', 'commission', 'country', 'development', 'economy', 'emission', 'energy', 'eu', 'ghg', 'global', 'inclu', 'international', 'member', 'need', 'order', 'paris', 'policy', 'regard', 'report', 'sector', 'state', 'stress', 'sustainable', 'underline', 'welcome']

feature of d5:
['2019', 'agreed', 'agreement', 'ambition', 'carbon', 'clear', 'climate', 'country', 'credit', 'current', 'damage', 'draft', 'emission', 'final', 'finance', 'global', 's', 'market', 'new', 'outcome', 'paris', 'plan', 'pledge', 'project', 'rule', 'say', 'set', 'talk', 'text', 'year']

feature of d6:
['2019', '25th', '51', 'adaptation', 'agreement', 'air', 'body', 'change', 'climate', 'commitment', 'community', 'conference', 'contribution', 'cop24', 'cop25', 'count', 'discus', 'financial', 'global', 'government', 'health', 'implementation', 'including', 'issue', 'national', 'paris', 'relevant', 'subsidiary', 'unfccc', 'work']

feature of d7:
['2019', 'achieve', 'asset', 'business', 'change', 'clear', 'climate', 'coal', 'commitment', 'company', 'cop25', 'emission', 'global', 'government', 'industry', 'multi', 'need', 'net', 'option', 'pathway', 'remains', 'risk', 'sector', 'significant', 'solution', 'target', 'technology', 'term', 'whilst', 'zero']

feature of d8:
['13', '2019', '25th', 'achievement', 'agreement', 'change', 'climate', 'conference', 'cop25', 'december', 'event', 'fund', 'gcf', 'key', 'madrid', 'mechanism', 'natio', 'ndas', 'operationalisation', 'organised', 'organising', 'paradigm', 'paris', 'participation', 'party', 'project', 'spain', 'support', 'term', 'unfccc']

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feature of d11:
['13', '2019', '25th', 'achievement', 'agreement', 'change', 'climate', 'conference', 'cop25', 'december', 'event', 'fund', 'gcf', 'key', 'madrid', 'mechanism', 'natio', 'ndas', 'operationalisation', 'organised', 'organising', 'paradigm', 'paris', 'participation', 'party', 'project', 'spain', 'support', 'term', 'unfccc']
```

For the feature extraction part, I give up reading some PDF files.

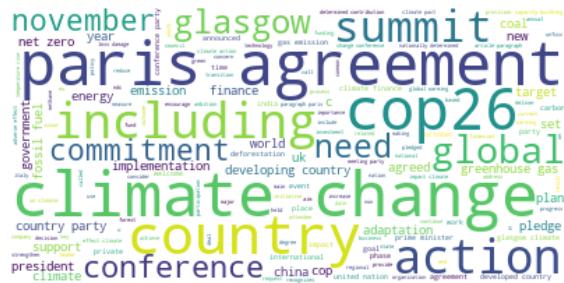
The topic one focusses on climate, agreement, global, carbon, ambition, new, market, adaptation, decision, commitment, draft, negotiation, government, outcome, economy, fund. It shows that the negotiation about the ambitions, decisions and commitment of each country.

The topic two focusses on Paris, emission, action, finance, target, energy, impact, policy, rule, development. There are still needs from developed countries on finance and energy.

The topic three focusses on country, talk, mechanism, plan, health, implementation, forest.

Each countries need a plan about implementation on environments.

COP26:



Key words of COP26 are Paris agreement, climate change, country, action, global, Glasgow.

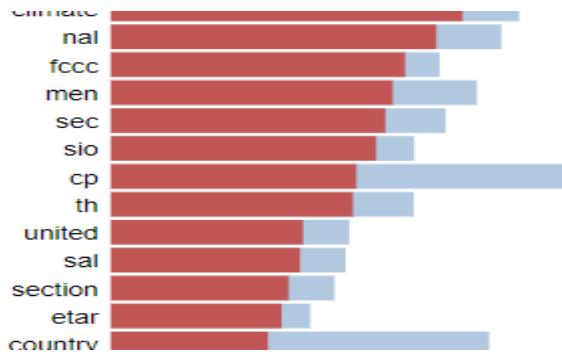
```
[ 'action', 'africa', 'announced', 'asset', 'carbon', 'change', 'climate', 'commitment', 'company', 'cop26', 'country', 'degree', 'development', 'global', 'iea', 'inclusion', 'investment', 'investor', 'market', 'nacs', 'net', 'new', 'opportunity', 'outcome', 'private', 'sector', 'significant', 'transition', 'view', 'zero' ]
feature of d4:
[ '2021', 'agreement', 'aim', 'change', 'climate', 'conference', 'cop', 'cop26', 'country', 'coy16', 'day', 'degree', 'glasgow', 'global', 'moment', 'nation', 'paris', 'people', 'place', 'plan', 'summit', 'time', 'took', 'uk', 'united', 'warming', 'world', 'year', 'youth' ]
feature of d5:
[ 'accelerate', 'century', 'change', 'climate', 'cop26', 'country', 'crisis', 'deliver', 'emission', 'encourage', 'finance', 'global', 'goal', 'mobilise', 'need', 'net', 'national', 'paris', 'people', 'phase', 'photograph', 'protect', 'secure', 'switch', 'tackle', 'target', 'trillion', 'vehicle', 'work', 'zero' ]
feature of d6:
[ '19', '2020', '2021', '25', '26', 'bureau', 'change', 'climate', 'conference', 'cop', 'coverage', 'covid', 'event', 'glasgow', 'hub', 'knowledge', 'milan', 'necessary', 'negotiation', 'newsletter', 'november', 'october', 'party', 'place', 'related', 'sdg', 'time', 'uk', 'unfccc', 'update' ]
feature of d7:
[ 'action', 'activity', 'agreed', 'agreement', 'carbon', 'cent', 'change', 'climate', 'coal', 'cop26', 'country', 'emission', 'far', 'finance', 'gas', 'glasgow', 'global', 'greenhouse', 'impact', 'methane', 'need', 'new', 'paris', 'phase', 'support', 'target', 'world', 'year', 'zero' ]
feature of d8:
[ '2020', '2021', '2030', 'agreement', 'carbon', 'change', 'china', 'climate', 'coal', 'conference', 'cop26', 'country', 'deforestation', 'emission', 'fossil', 'fuel', 'glasgow', 'global', 'minister', 'nation', 'november', 'paris', 'pledge', 'president', 'prime', 'summit', 'target', 'united', 'zero' ]
feature of d9:
[ '2020', 'agreed', 'agreement', 'banner', 'change', 'china', 'clean', 'climate', 'co2', 'coal', 'commitment', 'conference', 'cop', 'cop26', 'country', 'cut', 'emission', 'energy', 'fossil', 'gas', 'glasgow', 'global', 'leader', 'methane', 'money', 'phase', 'pledge', 'warming', 'world', 'year' ]
feature of d10:
[ '12', '2020', '2021', 'agreement', 'change', 'china', 'climate', 'convention', 'cop', 'cop26', 'country', 'date', 'election', 'event', 'glasgow', 'government', 'held', 'meeting', 'nation', 'new', 'november', 'paris', 'place', 'postponement', 'submit', 'summit', 'tbc', 'uk', 'unfccc' ]
feature of d11:
[ 'action', 'adaptation', 'agreement', 'article', 'building', 'change', 'climate', 'conference', 'contribution', 'country', 'decision', 'developed', 'developing', 'development', 'emission', 'finance', 'financial', 'global', 'goal', 'implementation', 'importance', 'including', 'need', 'paragraph', 'paris', 'party', 'recognizes', 'support', 'e', 'welcome' ]
```

The topic one focusses on global, finance, developing, commitment, support, world, greenhouse, carbon, increase, impact, zero. It shows that to reduce global warming, some countries want to arrive net zero emissions within a period.

The topic two focusses on Paris agreement, Glasgow, action, financial, agenda, implementation, government, decision, energy, fossil, technology. It shows that the Glasgow Climate convention asks for a financing agenda. Besides, it wants to reduce emission from energy, fossil fuel and technology aspect.

The topic three focusses on nation, pledge, temperature, target, private, development, deforestation, importance, sustainable. It shows that countries set a target to keep temperatures and against deforestation to keep sustainable development.

Discussion:



The Result of the feature extraction, Word cloud and topic modelling basically shows the content of every COPs. But there is a problem, some PDF file cannot be read by our PDF reader. The PDF reader works well at first, and suddenly it cannot read some specific PDF files. And it results the imprecise conclusion in some feature extraction, word clouds and topic modelling. It is too late to find this mistake, but I try to fix it as soon as I find it and it keeps the precise of the leftover results.

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f9
'co ian fer ence o f t he P ar ties\n \n \nT we nt y\ n-\nfini ft h\ n \nse ssio n\ n \nMa d r id \n\ n-\n1 3 Dec emb er 2 \n0 1 9\n \nA d o p ted a g end a\ n \n.\n \n\nop enin
f t he se ssio n.\n \n2.\n \nor ganiza tio nal matter s:\n \n( a)\n \nE lectio no ftheP r esid ento fthe Co nfer e nce o ftheP ar tiesatist we nt y\ n-\nfini ft h\ n\nesessio
n;\n \n( b)\n \nAd o p tio n o f t he r ule s o f o np r o ce dure s;\n \n( c)\n \nAd o p tio n o f t he age nd a;\n \n( d)\n \nE lectio n o f o f ficer s o t her tha
e P r esid ent;\n \n( e)\n \nAd mis sio n o f o f fice r ga nizatio ns a's o b ser ver s;\n \n( f)\n \nor ganiza tio n o f wo rk , i ncl ud i ng fo r t he se ssio ns o f t he
b si d i ar y b o d ies;\n \n( g)\n \nB ate s and ve nues o f fice r ur e ses sio ns;\n \n( h)\n \nAd o p tio n o f t he rep o r t o f t he se ssio ns o f t he
o f fice r s b si d i ar y b o d ies;\n \n( a)\n \nRep o r t o f t he s ub si d i ar y B o d y fo r Scienti fic a nd T ec hnolo gic a l Ad v ice;\n \n( b)\n \nRep o r t o
e S b si d i ar y B o d y fo r I mp le me ntatio n.\n \n4.\n \nRep o r ting fr o m a nd r evie w o f P ar ties includ ed in An nex I to t he Co nve ntio n.\n \n5.\n \n
o r t i\ning fr o m P ar ties no t i nc lud ed . In An ne x I to t he Co nve ntio n.\n \n6.\n \nRep o r t o f t he Ad aptatio n Co mm ittee.\n \n7.\n \nM ar sa w I nter na
l Me c han ism fo r Lo ss a nd Da ma ge\ nass o ciate d with Cli mate .\n \nCh a nge\ nmp ac ts.\n \n8.\n \nMa tter s r elatin g g to fi na nce :\n \n( a)\n \nLo
-nter n cl i mate fi na nce ;\n \n( b)\n \nMa tter s r elatin g g to t he S tand i n g Co mm ittee o n Fi na nce ;\n \n( c)\n \nRep o r t o f t he Gr ee n Cli mate Fu nd
t he Co nfer ence o f t he P ar ties and \nGuid a nce to t he Gr ee n Cli mate Fu nd ;\n \n( d)\n \nRep o r t o ftheG lob al F vir o nmen tFacilit yto t heCo nfer
eo ftheP ar ties \nand \nGuid a nce to t he G lobal E nviron men t Facilit y.\n \n9.\n \nDev elo p me nt and tr an sfer o f t ec hnolo gies; j o int an nual r
r t o f t he T ec hnolo g y\ nEx ec utive Co mm ittee a nd t he Cli mate T ec hnolo g y Ce ntre a nd Net wo rk .\n \n10.\n \nCap ac it y\ n-nd er t he
nve ntio n.\n \n11.\n \nMa tter s r elatin g g to t he lea st d evelo p ed \n\nc o untri es.\n \n12.\n \nRep o r t o f t he fo r um o n t he i m p le me ntati
on o f r esp onse mea sures.\n \n13.\n \nGend er and cli mate cha nge.\n \n14.\n \nAgend a \n\nc o m d o es no t p rej ug ge ou tc o mes o n matt ers related to t he e go vern an ce o f \nthe W\narsaw \nI nn tern ati onal \nM\nech anism.\n
\nc o nsider atio n o f p o p o sal s b y P ar ties fo r am e nd me nts to t he Co nve ntio n and t he Co nve ntio n o f t he Ar ticle\n \n15.\n \n( a)\n \nOp o sal fr o m t i
uss ian Fe der atio n to ame nd Ar ticule 4 , par agr aph 2 ( f ) , no f t he Co nventio n;\n \n( b)\n \nAd m i ni strati ve , financia l a nd insti tutio nal matter s:\n \n( a)\n
d it r ep o r t a nd financia l s t a t em ents fo r 2 \n0 1 8 ;\n \n( b)\n \nB ud get p er fo rma nce fo r t he bi enni u m 2 \n0 1 8\n \n02 1 9 ;\n \n( c)\n \nOp o sal fr o m t he Gui
ne and Me xico to ame nd Ar ticles 7 and 18 \nno f t he Co nventio n.\n \n( d)\n \nDec isio n\ n-umak ing in g i n t he UN F CC C p ro cess.\n \n17.\n \nHig h-lev el seg me nt:\n \n( a)\n
e b ud get fo r t he bi enni u m 2 \n0 1 8\n \n02 1 9 ;\n \n( b)\n \nDec isio n\ n-umak ing in g i n t he UN F CC C p ro cess.\n \n18.\n \nAnother ma tter s.\n \n19.\n \nCo ncl usio n o f t he se ssio n:
n:\n \n( a)\n \nAd o p tio n o f t he se ssio n.\n \n( b)\n \nCo ncl usio n o f t he se ssio n.\n \n( c)\n \nOp o sal fr o m t he se ssio n.\n \n( d)\n \nCo ncl usio n o f t he se ssio n.\n
\nclo s ur e o f t he se ssio n.'
```

Firstly, I try to remove all the string which length is smaller than 3. But I suddenly realized that my PDF reader cannot read that file. In the future, the PDF reader must be optimized.

Hence, to keep precise of the rest of the results. I decided to give up reading PDF files.

Obviously, the result looks better, but a plenty of data is removed at the same time.

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