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Data Article

# Metadata for climate change adaptation plans of small and mid-size French and American cities



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## ABSTRACT

The present dataset consists of metadata for 36 examples of publicly available multi-issue climate change adaptation plans of small and mid-size urban communities in France and the United States. Compiled by Lioubimtseva and da Cunha [1] as a pilot sample for a comprehensive monitoring and evaluation system developed by the authors, the complete dataset comprises assessment results based on 24 criteria of the plans' structure, content, and development process. To protect information about quality scores of individual planning documents, this published part of our dataset is limited to the essential information about the cities' profiles and their adaptation plans, with plan assessment results presented in Boolean format instead of actual rating scores, and the highlights of the strong points of each plan (instead of the actual quantitative scores generated in our study). The purpose of this dataset is to provide users with references to examples of strong points of the first generation climate adaptation plans developed between 2007 and 2017 in both countries.

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## Specifications Table

Subject	Planning and Development
Specific subject area	Climate change adaptation planning
Type of data	Table Figure Image
How data were acquired	Exploitation of national databases, institutional websites, and email communications with host agencies
Data format	Structured Categorized Analyzed
Parameters for data collection	Climate adaptation plans downloaded on cities institutional websites
Description of data collection	National databases, institutional websites, and email communications with host agencies
Data source location	Primary Data Source (more details on Mendeley Data, V1, doi: <a href="https://doi.org/10.17632/3bw6k4fy4y.1">https://doi.org/10.17632/3bw6k4fy4y.1</a> ) U.S. climate plans on the following cities institutional websites: City of Homer, AK Taos County & Town of Taos, NM City of Waveland, MS Laguna Woods, CA Punta Gorda, FL Marquette, MI Keene, NH Chester, PA Groton, CT Sarasota, FL Santa Cruz, AZ Flagstaff, AZ Santa Fe River watershed & Santa Fe County, NM & Santa Fe, NM Santa Barbara, CA Albany, NY Boulder County, CO City of Boulder, CO Berkeley, CA Alexandria, VA Grand Rapids, MI Chula Vista, CA Foreign climate plans on the following cities institutional websites: CC de la Vallée de Chamonix-Mont-Blanc CC de Montrevel en Bresse CC Caux Vallée de Seine (CVS) CA Var Esterel Méditerranée (CAVEM) Le Grand Chalon CA du Niortais Cherbourg-en-Cotentin CA du Centre de la Martinique (CACEM) CU de Dunkerque Brest Métropole Dijon Métropole Grand Nancy Perpignan Méditerranée Métropole Clermont Auvergne Métropole Saint-Etienne Métropole PCET Ouest 06: CA Sophia Antipolis (CASA), CA du Pays de Grasse (CAPG), Cannes Pays de Lérins (CAPL)
Data accessibility	In a public repository Repository name: Mendeley Data Data identification number: Mendeley Data, V1, doi: <a href="https://doi.org/10.17632/3bw6k4fy4y.1">https://doi.org/10.17632/3bw6k4fy4y.1</a> Direct URL to data: <a href="https://data.mendeley.com/datasets/3bw6k4fy4y/1">https://data.mendeley.com/datasets/3bw6k4fy4y/1</a>
Related research article	Lioubimtseva, E., da Cunha, C. (2020). Local climate change adaptation plans in the US and France: comparison and lessons learned in 2007–2017. <i>Urban Climate</i> , 31, 100,577. doi: <a href="https://doi.org/10.1016/j.uclim.2019.100577">https://doi.org/10.1016/j.uclim.2019.100577</a>

## Value of the Data

- The data provide a sample collection of 36 first-generation climate change adaptation plans developed by small and mid-size urban communities in France and the United States, including the metadata and some key attributes of the plans based on the assessment by Lioubimtseva and da Cunha [1]. It provides highlights of strong points of case studies, along with plan access information that can be used for future analysis or as examples for development of future climate change adaptation plans.
- This dataset is primarily intended to help small urban communities, planning professionals, and local governments, interested to tap into the recent experience of their peers, both at home and internationally.
- The dataset compiles location, population, basic climate data, and plan access data for 36 representative urban communities with population between 5000 and 300,000 people selected by the authors. It is a valuable source of information for urban planners, local governments, and researchers, as a library of cases studies and their best practices and also as a benchmark for future broader studies.

## 1. Data Description

The number of local climate adaptation plans is growing in many countries. Nevertheless, the monitoring of these plans and their strengths and weaknesses has been very limited. Planners, environmental organizations, and especially local communities urgently need comparable data about existing planning efforts, cross-national knowledge sharing, collaboration, peer-learning, and transfer of successful planning practices

The complete dataset consists of 1) metadata for 36 first-generation multi-issue climate adaptation plans, developed by small and mid-size urban communities in 2007–2017 (20 in the United States (U.S.) and 16 in France); 2) assessment results based on 24 criteria derived from climate adaptation literature in English and in French; and 3) a word cloud, based on the plans review. The complete dataset can be found as Mendeley Data [2].

The dataset consists of record cards providing the key geographic information about each city and the results of our assessment of its climate change adaptation plan (Table 1). Two data files (Record\_cards\_US\_Plans.pdf and Record\_cards\_French\_Plans.pdf) display record cards for the U.S. and French cities, spatially linked in the GIS to the geographic coordinates on the respective national maps (Fig. 1A and B in [1]).

We describe the sections of Table 1 below.

**Place:** name and location of the community served by the climate adaptation plan.

**Latitude and longitude:** geographic coordinates of the place of the plan as decimal fractions.

**Population:** The last national census data from the US Census 2010 [3] and INSEE 2015 [2]. When a plan covers both a city/town and a broader administrative or census designated area both population numbers are provided.

**Climate:** World climate types based on the Köppen-Geiger climate classification [4].

**City website:** website of the community served by the climate adaptation plan (not necessary hosting it or sponsoring it).

**Climate adaptation document(s):** complete title of the plan and its annexes in the language of its country of origin.

**Publication year:** based on the copyright date or date of publication indicated on its cover page.

**Plan number of pages.**

**Annexes:** number of pages and publication year (if applicable).

**Authors:** Primary authors of the document as listed on the cover pages or in the copyright (may include names of individuals or organizations).

**Table 1**  
Metadata record card.

##	Place:	Climate adaptation planning document(s): Annexe(s):			
Latitude:		Plan pub. year:	Plan number of pages	Annexe(s): number of pages (pub. year)	
Longitude:		Author(s):			
Population:		Other Contributors:			
Climate:		Last Access website:			
City website:		Additional documents examined in the study:			
Key attributes of the plan:					
Structure and organization		Quality of the content and scientific basis for adaptation planning		Plan development process, inclusivity, and coordination	
Clarity, readability, and logical structure	Yes/No	Informed by climate trends and scenarios	Yes/No	Role of civil society in implementation	Yes/No
		Informed by climate change impact analysis	Yes/No		
Time-bound achievable objectives	Yes/No	Informed by vulnerability analysis to climate change	Yes/No	Role of private sector in implementation	Yes/No
		Consideration of the current and future risks and opportunities	Yes/No		
Inclusion of implementation planning	Yes/No	Consideration of social equity and justice	Yes/No	Participatory planning process	Yes/No
		Actions addressing continuity of public services	Yes/No		
Inclusion of plan for budgeting	Yes/No	Actions including ecosystem-based approaches	Yes/No	Coordination with disaster-management planning	Yes/No
		Flexibility and recognition of uncertainties	Yes/No		
Inclusion of plan for evaluation	Yes/No	Consideration of non-climatic challenges	Yes/No	Coordination with GHG mitigation planning	Yes/No
		Place-based focus	Yes/No		
Inclusion of measurable performance indicators	Yes/No	Integration across multiple societal sectors	Yes/No	Awareness of other local adaptation plans	Yes/No
		Integration across multiple geographic scales	Yes/No		

**Other contributors:** all contributors listed on the cover page of a plan, acknowledgements and other components of a plan besides the Authors.

**Last access website or contact email:** the URL of the published plan (if available) with the date of the last access. Contact email of the corresponding authors if the document is not accessible on the Internet.

**Additional documents examined in the study:** additional documentation that have been used in this evaluation to understand the planning context, such as related climate action plans, hazard mitigation plans, and, if available, revised and more recent plans, with their URLs and the last date of access.

**Key attributes of the plan:** summary of the plan assessment results based on 24 criteria. For the purpose of this open access publication the ranking scores for criteria and qualitative total scores of plans are replaced by Boolean data (Yes or No), where No means <1 and Yes means >1. The criteria field is highlighted in blue if the score is 4 (excellent). Scores 1–3.99 are coded as Yes, Scores 0–0.99 are coded as No. The criteria ranked as 4 are highlighted in the dataset as exemplary strong points to guide users to the most relevant examples. Complete analysis of the actual scores can be found in Lioubimtseva and da Cunha [1].

**Table 2**

Local administrative divisions in France reflected in the names of PCAETs [11,12].

Name	Abbreviation	Definition
<i>Communautés urbaines</i> (urban communities)	CU	A public institution of intercommunal cooperation with its own taxation (EPCI) bringing together several municipalities forming, on the date of its creation, a group of more than 500,000 inhabitants. It provides for important integration of member municipalities in most of cities competences
<i>Communautés d'agglomération</i> (agglomeration communities)	CA	An EPCI bringing together several municipalities forming, on the date of its creation, a group of more than 50,000 inhabitants in one piece and without any enclave, around one or more communes center of more than 15,000 inhabitants. It provides an integration of member municipalities on, at least, these competences: urban policy economic development, community planning; social balance of habitat.
<i>Communautés des communes</i> (communes communities)	CC	An EPCI bringing together several municipalities forming, on the date of its creation, a group of municipalities in one piece and without any enclave. Its purpose is to associate municipalities within a solidarity area, with a view to developing a joint project for development and spatial planning.

The dataset also includes a new datum – a word cloud - based on the plans review (Words Cloud.jpg). These words are a guesstimate providing a synthetic vision of the key concepts commonly addressed in local climate adaptation plans. It highlights different categories of keywords, for example, the processes and tools used during the creation of the plans (use of climate scenario, participation, vulnerability assessment, indicator) and different scales (international, European, national, regional). The word cloud was generated from the text of our main article with Atlas.Ti software. Using the Word Cruncher count of all words in the article, we highlighted those occurring more than 16 times and excluded common words using the stop and go list function.

This data article displays three tables:

- **Table 1** offers the definition of local administrative divisions in France reflected in the names of PCAETs.
- **Table 2** is a geographic and bibliographic locator of climate adaptation plans for small and mid-size urban communities in France and the United States.
- **Table 3** provides an overview of the structure of the record cards displayed as supplementary material. It includes the key geographic information about each city and provides a full bibliographic record and assessment summary of their climate adaptation plans.
- **Fig. 1** display a radar of quality scores of climate adaptation plans in terms of 1) structure and organization of adaptation plans; 2) quality of their content and scientific basis; and 3) plan development process, inclusivity, and coordination.

## 2. Experimental Design, Materials and Methods

Compiled as a pilot sample for the analysis of structure, content, and planning process of local adaptation plans [1], the study compares the U.S. and French local plans because the two countries exemplify conceptually different models of climate planning.

### 2.1. Selection of the U.S. and French plans

We selected 36 multi-issue local climate change adaptation plans of small and mid-size cities (population between 5000 and 300,000 people), representative of diverse climate types and

**Table 3**  
French and American climate adaptation plans cities information.

Place	Population 2015 (INSEE, 2018)	Climate adaptation planning document	Year published	Metadata record ##
French adaptation plans				
CC de la Vallée de ChamoniX-Mont-Blanc	(13,150) ChamoniX: 8906	Plan Climat Energie Territorial de la Vallée de ChamoniX-Mont-Blanc - Plan d'actions	2012	1FR
CC de Montrevel en Bresse	(17,517) Montrevel en Bresse: 2439	Le Plan climat énergie territorial (PCET) - Programmes d'actions	2011	2FR
CC Caux Vallée de Seine (CVS)	(76,842) Bolbec: 11,679	Plan Climat Energie Territorial 2014–2020	2013	3FR
CA Var Esterel Méditerranée (CAVEM)	(111,657) Fréjus: 52,897	Rapport stratégique - Plan Air-Energie Climat-Territorial - 2015–2020	2016	4FR
Le Grand Chalon	(113,746) Chalon-sur-Saône: 45,390	Plan Climat Energie Territorial –Grand Chalon	2012	5FR
CA du Niortais	(120,545) Niort: 58,952	Plan Climat Energie Territorial -Communauté d'Agglomération de Niort	2013	6FR
Cherbourg-en-Cotentin	(120,829) Cherbourg: 190,547	Plan Climat Energie Territorial (PCET) de la Communauté Urbaine de Cherbourg - Programme d'actions	2013	7FR
CA du Centre de la Martinique (CACEM)	(158,944) Fort de France: 82,502	Plan Climat Territoire CACEM - Plan d'actions 2012–2017	2012	8FR
CU de Dunkerque	(199,893) Dunkerque: 88,876	Plan Air Climat Energie Territorial 2015–2021	2015	9FR
Brest Métropole	(208,497) Brest: 139,163	Plan Climat énergie. Le temps est à l'action - 2012–2017	2012	10FR
Dijon Métropole	(251,650) Dijon: 155,114	IllicO: le Plan Climat Energie du Grand Dijon	2011	11FR
Grand Nancy	(256,558) Nancy: 105,162	Plan Climat Air Energie Territorial du Grand Nancy	2012	12FR
Perpignan Méditerranée Métropole	(266,909) Perpignan: 121,934	Plan Climat-Energie Territorial (2012–2017)	2012	13FR
Clermont Auvergne Métropole	(286,190) Clermont-Ferrand: 141,398	Plan Air-Energie Climat-Territorial (PAECT)	2014	14FR
Saint-Etienne Métropole	(402,882) Saint Etienne: 171,057	Plan Climat Energie Territorial de Saint-Etienne Métropole	2011	15FR
PCET Ouest 06: CA Sophia Antipolis (CASA)	(436,560) (CASA: 175,908) Antibes: 74,875	Plan climat énergie Ouest 06	2012	16FR
CA du Pays de Grasse (CAPG)	(CAPG: 101,860) Grasse: 50,937			
Cannes Pays de Lérins (CAPL)	(CAPL: 158,225) Cannes: 74,285			
U.S. adaptation plans				
Place	Population (U.S. Census 2010)	Climate adaptation planning document	Year published	Metadata record ##
City of Homer, AK	City: 5003	City of Homer Climate Action Plan	2007	1US
Taos County	County: 32,937	Forest and Water Climate Adaptation: a Plan for Taos County, NM	2010	2US
Town of Taos, NM	Town: 5716			
City of Waveland, MS	6435	City of Waveland Local Hazard Mitigation Plan	2013	3US
Laguna Woods, CA	16,192	City of Laguna Woods Climate Adaptation Plan	2014	4US

(continued on next page)

**Table 3** (continued)

Punta Gorda, FL	16,641	City of Punta Gorda Adaptation Plan	2009	5US
Marquette, MI	21,355	Adapting to Climate Change and Variability	2013	6US
Keene, NH	23,409	Keene, NH adapting to Climate Change: Planning a Resilient Community.	2007	7US
Chester, PA	33,972	The City of Chester Vision 2020 Climate Adaptation Planning Elements	2014	8US
Groton, CT	40,115	Preparing for Climate Change in Groton, Connecticut: a Model Process for Communities in the North East	2011	9US
Sarasota, FL	52,182	City of Sarasota Climate Adaptation Plan (technical memo)	2016	10US
Santa Cruz, CA	59,946	City of Santa Cruz Climate Change Adaptation Plan 2012–2017	2011	11US
Flagstaff, AZ	65,870	Resiliency and Preparedness Study	2012	12US
Santa Fe River watershed	(County: 144,170) City: 81,030	Forest and Water Climate Adaptation; a Plan for the Santa Fe Watershed	2013	13US
Santa Fe County, NM				
Santa Fe, NM				
Santa Barbara, CA	88,400	City of Santa Barbara Climate Action Plan	2012	14US
Albany, NY	97,856	Albany Climate Change Vulnerability Assessment and Adaptation Plan	2013	15US
Boulder County, CO	(County: 294,567)	Boulder County Climate Change Preparedness Plan	2012	16US
City of Boulder, CO	City: 97,385			
Berkeley, CA	112,580	The City of Berkeley Climate Action Plan	2009	17US
Alexandria, VA	139,966	City of Alexandria Energy and Climate Change Action Plan Local Actions to Save Energy, Reduce Greenhouse Gas Emissions, and Prepare for the Impacts of Climate Change 2012 – 2020	2011	18US
Grand Rapids, MI	188,040	Grand Rapids Climate Resiliency Report	2013	19US
Chula Vista, CA	243,916	City of Chula Vista Climate Adaptation Strategies Implementation Plan	2011	20US

geographic regions of the US and France. The selection of adaptation plans is fully explained in [1, p4].

Online databases and bibliographic review were used as a departure point to identify communities with existing climate adaptation plans and their umbrella organizations. We used Google searches to locate websites of the cities, the published plans, and other additional documents (annexes, prior plans and related reports). The last access date of the plans has been specified in the record cards [2]. Population numbers were obtained from the national censuses' websites [3,4] and climatic types of each location were identified based on Köppen classification [5].

French climate adaptation plans were located through the national ADEME (Agence de l'environnement et de la maîtrise de l'énergie – French Environment and Energy Management Agency) database [6]. The sample includes case studies from all climate zones and diverse geographic regions of France (Atlantic and Mediterranean coasts, the Alps and Massif Central, and overseas territories as Martinique). Examination of completion of adaptation plans by the communities meeting our criteria has led us to the sample of 16 Territorial Climate, Air, and Energy Plans<sup>1</sup> (PCAET/PCETs) of 18 urban communities. The selection includes plans of 7 “*communautés urbaines*” (CU), 5 “*communautés d'agglomération*” (CA), and 3 “*communauté de communes*” (CC) (see Fig. 1A in [1] and Table 2). Definitions of these local administrative divisions in France are available in Table 1. Some exceptions should be noted for French communities: the PCAET “Ouest 06” is a joint climate adaptation plan by three adjacent small cities (Sophia Antipolis, Pays de Grasse and Cannes Pays de Lérins) and the adaptation plan of Saint-Etienne Metropole covers an

<sup>1</sup> Plans climat air énergie territoriaux (PCAET) or Plans climat énergie territoriaux (PCET).



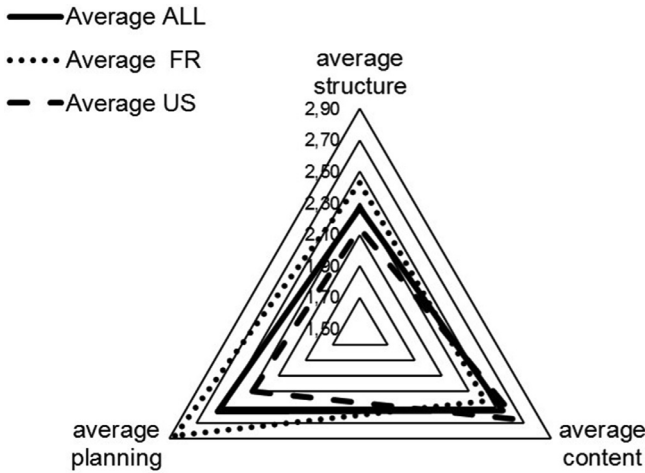


Fig. 1. Quality scores of climate adaptation plans.

ensemble of suburban and rural communities, higher than 300,000 people, adjacent to the main mid-size city of Saint Etienne.

To locate the U.S. climate adaptation plans we used online datasets of the Georgetown Climate Center Adaptation Clearinghouse [7], ICLEI USA [8], Local Model Forest Policy Program Climate Solutions University [9], and the U.S. EPA Climate Change Adaptation Resource Center [10]; independent reports, and scholarly reviews to identify cities meeting our selection criteria. The complete list of bibliographic sources can be found in Lioubimtseva and da Cunha [1]. The sample captures the majority of climate types and geographic regions of the United States, e.g. coastal areas, the Rockies, the Great Lakes, and Alaska. It includes 12 stand-alone municipal climate adaptation plans clearly titled as such, 5 climate action plans including adaptation and mitigation, 1 climate resiliency plan, one climate preparedness plan, and one local hazard mitigation plan, all based on their primary focus on climate adaptation planning, despite the terminological differences in their titles. The U.S. sample includes plans of 15 cities, 2 towns, 2 counties, and one watershed climate adaptation plan from 13 U.S. states (see Fig. 1B in [1] and Table 2).<sup>2</sup>

## 2.2. Plan assessment methodology

To facilitate monitoring, knowledge sharing, and cross-border comparison of climate adaptation plans we have developed a uniform system of 24 indicators, derived from the international bilingual literature (see Table 3 in [1]). This indicators system integrate the key aspects of structure and organization of adaptation plans (Group I); quality of their content and scientific basis (Group II); and plan development process, inclusivity, and coordination (Group III).

Ranking of each criteria of adaptation planning quality is based on a 0–4 scale: Lacking 0–0.99, Mentioned 1–1.99, Present 2–2.99, Explained 3–3.99, Clearly explained 4.

The same 0 to 4 ranking scale is used for the total values, defined as following: Poor 0–0.99, Fair 1–1.99, Good 2–2.99, Very good 3–3.99, Excellent 4.

<sup>2</sup> When a plan covers both a city/town and a broader administrative or census designated area both population numbers are provided. The upper figure in brackets is the population of the entire administrative or census designated division, the lower number is the population of the main city/town covered by the adaptation plan.

Complete analysis of the scores can be found in Lioubimtseva and da Cunha [1]. To protect information about quality scores of individual adaptation plans, we have excluded raw quantitative scores generated through the study from the publication. For the purpose of this open access publication the ranking scores for criteria and qualitative total scores of plans have been masked and replaced by the Boolean data (Yes or No), where No means  $<1$  and Yes means  $>1$ . The criteria ranked as 4 are highlighted in the dataset as exemplary strong points of each plan. Such format is chosen to guide users to examples of strengths in each climate adaptation plan without publicly disclosing all assessment scores.

### 2.3. Findings at glance

On average, French plans show slightly higher overall quality score compared to the U.S. plans (2.63 vs. 2.50), with more extreme quality range (1.17 – 3.29 vs. 1.63 – 3.48) and higher dispersion (SD 0.63 vs. 0.45) respectively (see Table 4 in [1]).

In Group I, the average scores of all plans are relatively good (2.27), ranging from 1.0 to 3.38 with SD 0.73 indicating high variability of scores. The French plans clearly score higher than the U.S. plans on average (2.43 vs. 2.14) and show lower dispersion (range 1.5 – 3.5 with SD 0.56 vs. 1.0 – 3.83 with SD 0.83). The average score for group II is 2.71 with a higher average value for the U.S. (2.78) than French (2.61) plans. The quality of French plans in this group is more variable (R 0.58 – 3.67, SD 0.86), compared to the U.S. plans (R 1.67 – 3.42, SD 0.53). In group III the overall average score of all included plans is 2.55, with French plans scoring higher (2.85) compared to U.S. plans (2.29) and showing lower dispersion (SD 0.61 vs. 0.70) (Fig. 1).

### Ethics Statement

The process of data collection does not involve experiment, or human sample.

### CRediT Author Statement

**Charlotte da Cunha:** Conceptualization, Methodology, Formal analysis, Writing-Reviewing and Editing; **Elena Lioubimtseva:** Conceptualization, Methodology, Formal analysis, Writing-Reviewing and Editing.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships which have or could be perceived to have influenced the work reported in this article.

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