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Community-Focused Resilience, Climate Adaptation, and Sustainability Planning – One in the Same or Distinct Planning Processes?

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Highlights

- Resilience, Adaptation, and Sustainability (RAS) planning guidance documents are an integral to communities' RAS planning efforts. These planning processes are being implemented concurrently in communities, but little examination has been conducted about their similarities and differences. Improved knowledge of how these processes are similar and potentially complementary, or may be distinct or present trade-offs to one another, could inform integration opportunities in the future.
- Twenty-six community planning guidance documents were selected for qualitative content analysis. A codebook guided text capture (i.e. coding) method, using six main concept areas relevant to the planning process (see **Figure 1**), was used. More specific codes within these areas were then used to systematically categorize the text of the documents (see **Table 1**).
- For the purposes of this presentation, we focus our analysis on data and information requirements (i.e., the Fact Base codes). Preliminary results indicate there are noteworthy differences in types of data and information needs across document types. These differences would need to be reconciled prior to attempting to integrate the planning processes.

Background

The definitions of resilience, climate change adaptation, and sustainability as used in planning documents differ (Clavin, D'Abreu, and Walpole 2020), and have been described as the following:

- Resilience** - the ability for a system to prepare for hazards, adapt to changing conditions, and recover rapidly from disruption; characteristics of resilient systems may include robustness, redundancy, diversity, inclusivity, adaptive capacity, and flexibility (Holling 1973; Gunderson 2000; Folke 2006; Folke et al. 2010; Scheffer 2009; Davidson et al. 2016; Meerow et al. 2016; NIST Community Resilience Program 2020).
- Climate change adaptation** - efforts addressing or mitigating the effects of climate change. Also represents the ability to "bounce back" or absorb shocks and return to a prior state of function, similar to resilience. It can reflect goals to sustain and protect existing activities, or promote system changes to build capacity for long-term change (Meerow et al. 2016; Moser et al. 2019; Hu et al. 2018; Eakin and Patt 2011).
- Sustainability** - within planning, a community planning concept often with a strong focus on environmental or ecological objectives, as a structured decision making process relating to ecological systems. (Berke and Conroy 2000; Romero-Lankao et al. 2016; Lei et al. 2014; Preston, Westaway, and Yuen 2011).

Methods

Selection Criteria:

- Authorship - government, NGO, or professional organization
- Audience - communities
- Content - guidance information to run a planning process

26 documents reviewed:

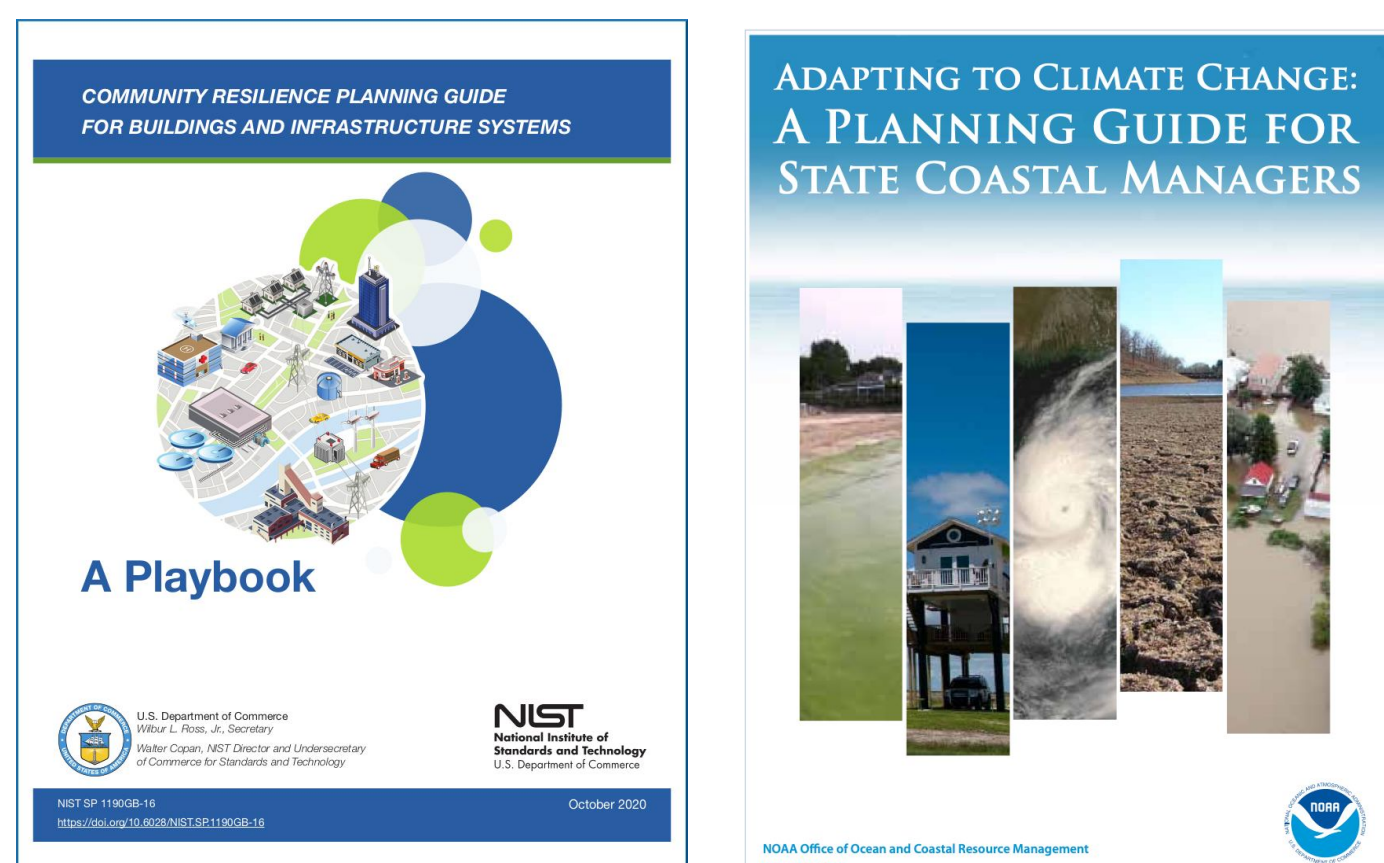
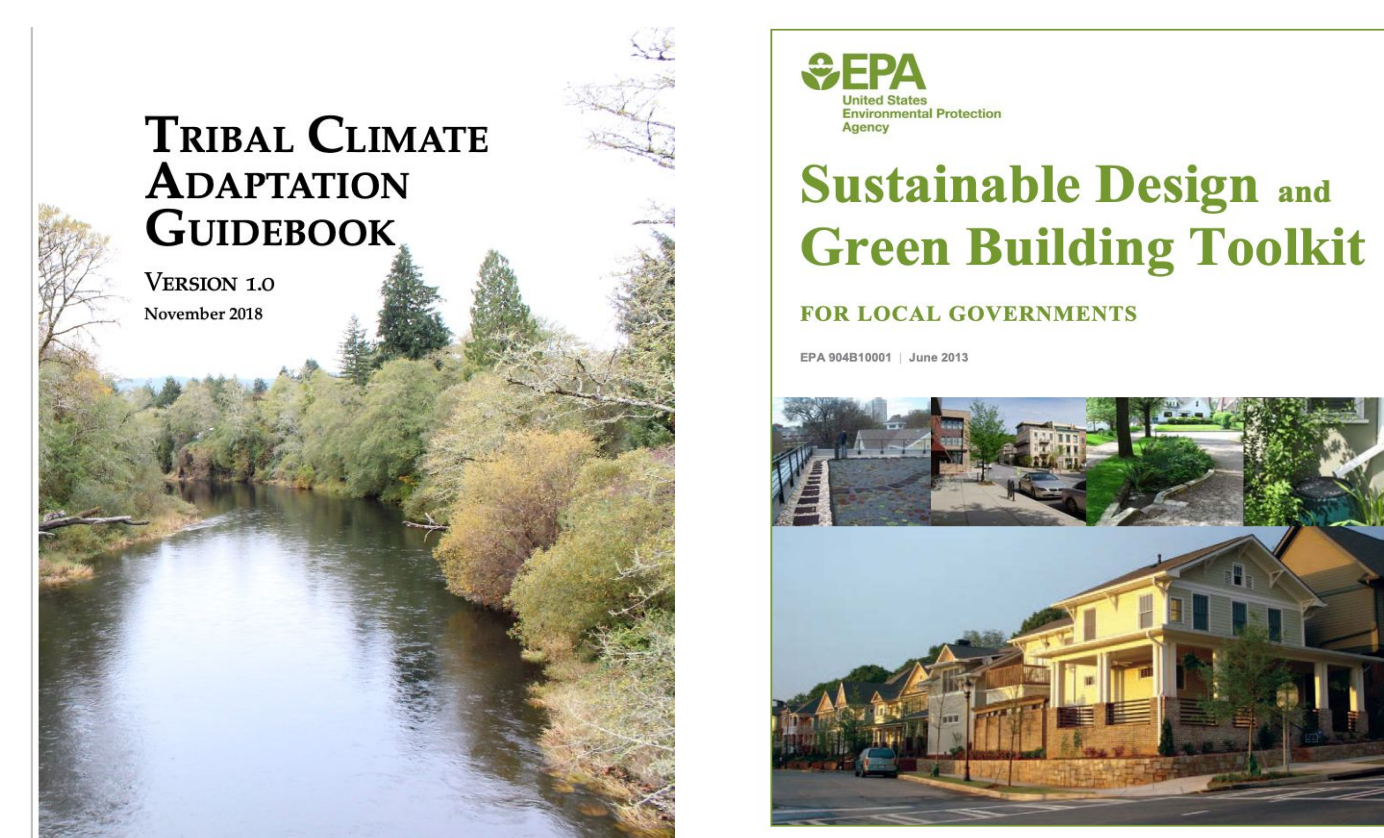
- 9 Climate Adaptation
- 11 Resilience
- 6 Sustainability

Codebook Development:

- Based on codebooks from Woodruff et al 2017; 2018; Berke et al. 2009
- Broadened to fit RAS

Content analysis methodology:

- Capture concepts of interest (via codebook) in documents
- Iterative codebook edits
- Periodic intercoder checks



Results

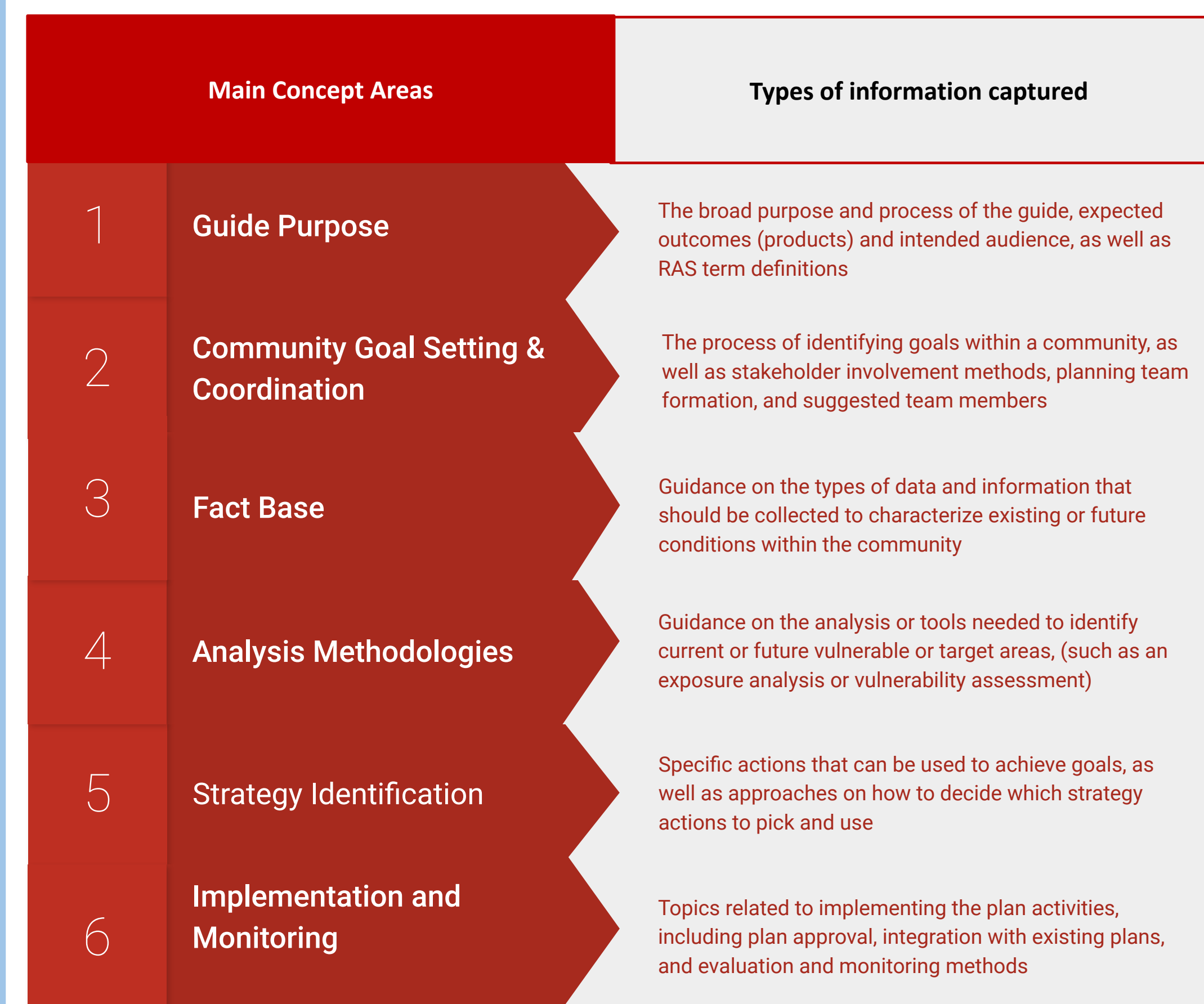


Figure 1. Codebook main concept areas and associated types of information captured.

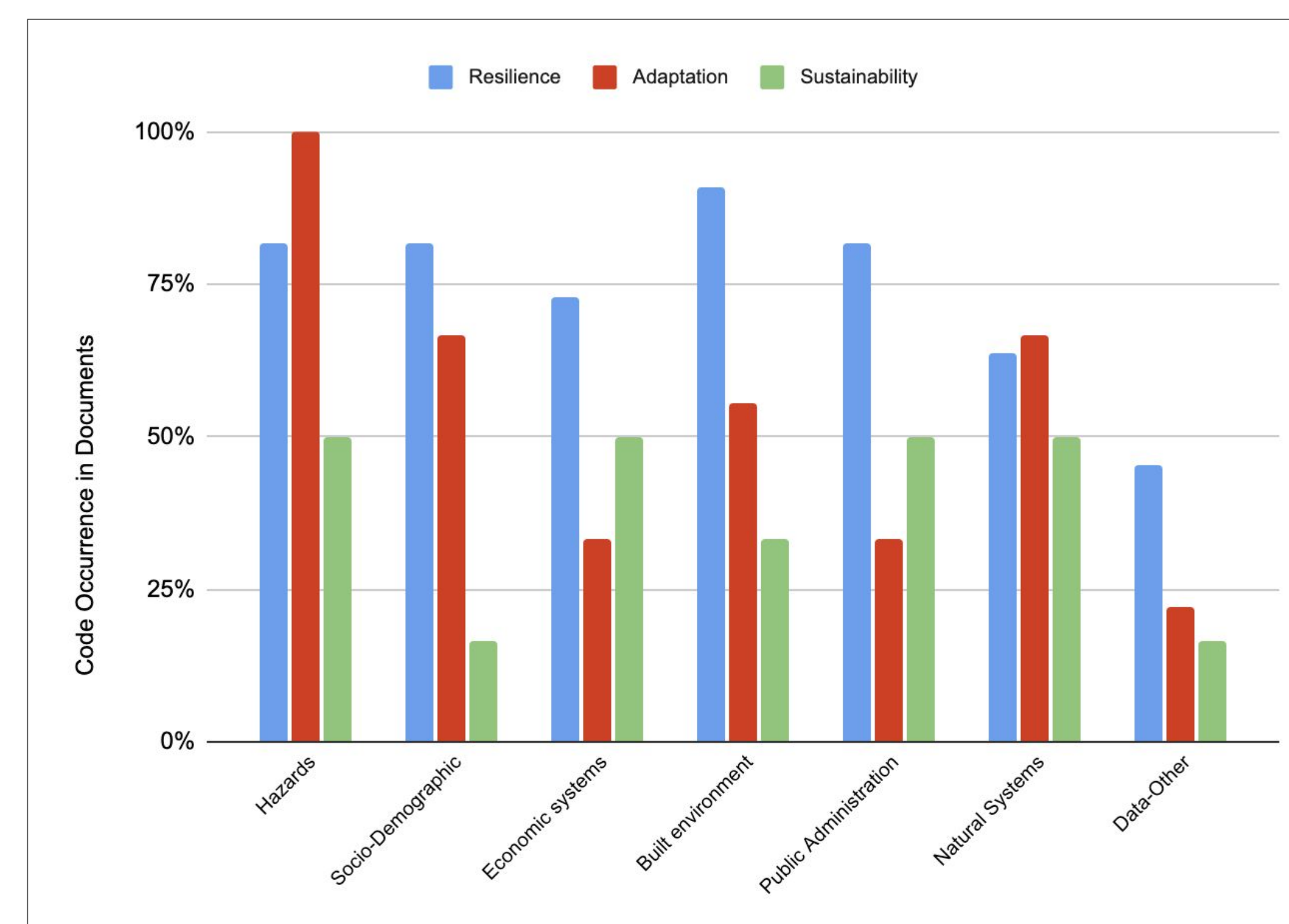


Figure 2. Code occurrence in documents by RAS type, within the Fact Base concept area (i.e., the types of information documents recommended collecting)

	Code Occurrence in Documents		
	Resilience	Adaptation	Sustainability
GUIDE PURPOSE			
Guide Purpose Statement	100%	78%	83%
Guide Outcomes	73%	56%	67%
Term Definition	73%	67%	67%
COMMUNITY GOAL SETTING AND COORDINATION			
Stakeholder Involvement	82%	100%	100%
Planning Team	55%	56%	67%
Community Goals Identification	64%	100%	100%
FACT BASE			
Current & Future data - General	45%	56%	50%
Hazards	82%	100%	17%
Socio-Demographic	82%	67%	50%
Economic Systems	73%	33%	33%
Built Environment	91%	56%	50%
Public Administration	82%	33%	50%
Natural Systems	64%	67%	17%
Data - Other	45%	22%	17%
ANALYSIS METHODOLOGIES			
Analysis Methods	91%	89%	100%
Specific Models	64%	78%	17%
STRATEGY IDENTIFICATION			
Strategy Action - General	55%	56%	33%
Physical Infrastructure	64%	56%	50%
Capacity, Management, and Planning	64%	89%	67%
Regulatory Policy and Legislation	82%	67%	67%
Financing and Funding	55%	67%	83%
Reduce Environmental Impacts	55%	22%	67%
Education and behavior change	55%	33%	50%
Strategy - Other	55%	33%	67%
Strategy Selection Methods	82%	78%	100%
IMPLEMENTATION AND MONITORING			
Implementation	64%	89%	50%
Outreach and Documentation	55%	89%	83%
Plan Compliance and Integration	55%	44%	33%
Evaluation and Monitoring	64%	89%	83%

Table 1. Code occurrence in documents by RAS type, ranging from 0% (present in none) to 100% (present in all)

While further analysis is currently ongoing, see **Table 1** for preliminary results. Our initial findings are:

- Overall, there were 2,681 segments of text captured using codebook concepts across the 26 documents.
- Across RAS, documents commonly contained Guide Purpose Statements (100%; 78%; and 83%, respectively), Stakeholder Involvement information (82%; 100%; and 100%, respectively) and recommended Analysis Methods (91%; 89%; and 100%, respectively).
- About half of resilience and adaptation documents contained general Strategy Actions (55% and 56%, respectively) while in sustainability documents these were less commonly captured (33%).

In this presentation, we focus on the types of information documents recommended collecting (i.e. Fact Base codes) (see **Figure 2**):

- Across all three types of documents, roughly half contained general data requirements (56% of resilience documents, 45% of adaptation documents, and 50% of sustainability documents).
- Most adaptation and resilience documents contained data on Hazards specifically (100% and 82%, respectively), while sustainability documents did so less often (17%).
- Resilience documents were more likely to contain Built Environment data (91%), Public Administration data (82%), Economic data (73%), and data types that fit in the "other" category (i.e., data requirements that did not fit in the Fact Base codes).
- Half of sustainability documents contained Socio-Demographic (50%), Built Environment (50%), and Public Administration types of data (50%), while other data types were captured in fewer than half of the sustainability documents.

Discussion

In the review of preliminary results of our content analysis of community planning guidance documents, we identified numerous similarities between Resilience, Adaptation, and Sustainability ("RAS") type planning approaches. Consistent with the findings of Webler (2016), the planning documents present a structured decision and analysis process that relies on technical and expert information collected through deliberative and participatory activities. There remains a lack of one-size-fits-all planning approaches, even after considerable guidance development efforts from multiple organizations and agencies (Bierbaum 2013; Solecki and Rosenzweig 2012).

For the purposes of this presentation, we mainly focus our analysis on data and information requirements (i.e., Fact Base codes) and comparisons to prior work in plan quality assessment:

- First, prior work has found that distinct aspects of planning are often emphasized across community guidance instruments, representing a broad range of processes, goals, and outputs (Preston 2011; Woodruff et al 2018). The high prevalence of hazard data requirements for the resilience and adaptation planning guidance documents compared to sustainability documents (82%; 100%; and 17%, respectively) is consistent with output-based analyses of local plans (Woodruff et al 2018), as well as prior analyses of disaster risk reduction and climate change adaptation as concepts (Serrao-Neumann et al. 2015).
- These differences are also consistent with prior user- and practice-focused examinations of planning activities across RAS practices, which indicate that there is a dominance of disaster and engineering based concepts in resilience planning (Keenan 2018).
- Prior work has also highlighted differences between sustainability and resilience-type approaches related to economic framing and differing interpretations of whether resilient systems "bounce back" from shocks (Romero-Lankao et al. 2016). These differences may be a possible explanation to our findings where resilience-type documents recommended collecting economic data more often than adaptation or sustainability approaches (73%; 33%; and 33%, respectively).

This work aims to support communities in becoming more sustainable, resilient, and in adapting to the impacts of climate change through informing the design of more consistent and, potentially, better integrated planning guidance products. For data and information requirements, there may be opportunities for integration and standardization in the future, and additional analysis is pending to inform this objective. Further work could also be conducted to:

- Better understand overlaps in RAS purposes, objectives, and goal setting processes.
- Identify if there are common analytical methods and whether they are complementary to addressing multiple planning objectives.
- Assess if consistent strategies, implementation methods, and evaluation approaches are presented across these planning processes and objectives.

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