# Capstone Project Stage 4: Food Systems and Sustainability

(Modules 10 and 11)

You’ve now completed the content modules for the Future of Food course. In Stage 4 of the capstone project, you’ll gather a bit more data about your region. In Stage 5, you will put together your final presentation with your assessment of the current status of your assigned regional food system, projections for future scenarios of increased human population growth and increased temperatures in your region, and your proposed strategies to enhance the resilience and sustainability of your region’s food systems.

In Stage 4, you will gather data related to what you’ve learned in Modules 10 and 11. Also, you will explore population projections for your assigned region, so you can begin to assess the potential future resilience of the food systems of your assigned region.



## What to do for Stage 4?

* Complete the *Stage 4* worksheet table (see below) summarizing the data you need to collect to complete this stage. Remember, you need to think deeply about each response and write responses that reflect the depth of your thought as informed by your research.
* Add questions and continue to research the questions in your worksheet files.
* Keep track of all of the resources and references you use
* Add relevant data, maps and figures to your PowerPoint file.
* Revise your CHNS diagram and/or create a new one incorporating topics from Modules 10 and 11.

## Capstone Project Stage 4 - Where do you stand?

Upon completion of Stage 4, you should have completed all of your research and data collection and be ready to prepare your final presentation.

Upon completion of stage 4, you should have at this point:

1. Four worksheet tables completed for Stages 1, 2, 3 and 4.
2. PowerPoint file containing figures, maps, data, and information that you’ll select from to prepare your final presentation.
3. Comprehensive reference and resource list documenting the sources of all of the data and information that you’ve gathered.
4. List of questions that you’ve hopefully answered. If there are major gaps or questions remaining, it’s important to discuss with your instructor now.
5. One or more CHNS diagrams illustrating the coupled human-natural systems in your region.
6. At this point you should have collected and incorporated at least 10 peer reviewed academic sources into all the worksheets combined.

# CHNS Diagram

Continue to populate the CHNS diagram with information from Modules 10 and 11. Add new lines, boxes, connections, and text in the diagram to illustrate the components of the human-natural system and their relationships. *Put your CHNS diagram(s) both here and in the powerpoint file.*

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| Stage 4: Strategies for Sustainability  |
| **Region Name** | **Country** | **State/Province** |
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| **Regional Food Setting: consider as a coupled human and natural system (CHNS) (Module 10)**Describe the food systems in your assigned region. Continue to add to the CHNS diagram that you’ve been working on all semester for your region.* How do human systems impact on food production and the environment through factors such as transportation systems and consumption preferences in the region?
* Are there any external markets that loom large?
* Government policies that are specific to the region?
* Briefly comment based on referenced material how environmental factors such as climate and soils impact on human decisions about what to grow and where? (More details on these factors are examined below)

*Tips to Start** It would be valuable to create an initial draft diagram the interaction of the Human and Natural system before answering these questions tying some examples into this section to elaborate on your diagram.
* You might want to go back at this point to prior capstones to build up upon previous research on consumption patterns and infrastructure.
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| **Regional Food Producing Setting (Module 10)*** What are the food systems in your assigned region?
* What overlap is there among the dominant types of food systems, e.g. situations in which households participate in different types of food system at the same time?
* What are the major different sources of food that are produced in this region? Comment on the size of the region’s food-producing operations.
* What are the most productive or highest value farm areas?
* What areas are less productive or valuable? This can be areas that food is being produced not for sale.
* What areas are characterized by alternative food systems or small farms?
* Which areas are characterized by large farms or corporate farming?
* Is there evidence of aquaculture, fishing, agriculture, hunting, foraging, or other means of precuring food?

*Tips to Start** These questions are quite broad but this section asks for you to broadly describe food production in your region. Make sure to capture mainstream (i.e. crop production) and fringe (i.e. gardening) food producing fringe activities. Don’t feel you have answer all the questions in this section.
* Make sure to support your responses with details and citations.
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| **Life-cycle Concepts (Module 10)**Using the life-cycle concepts introduced in Module 10, and starting with energy use at a life-cycle level, assess the regional food system in your assigned region. * Start with whether it will be more like the local, smallholder food system and level of production intensity, or a more fossil-fuel based system? Or somewhere in the middle?
* Does it depend on what type of production we are talking about, e.g. grazing animals versus intensive vegetables?
* How much does transport of food into or out of the region figure into the overall energy use?
* Are there other areas where it would be useful to apply a Life-cycle analysis, e.g. emission of pollutants or greenhouse gases?

*Tips to Start** Although we are not asking you to conduct a detailed LCA, you may be able to find LCA-type studies in academic or other literature that are comparable to your system in your regional context or a similar context. First think of some traits that you can compare your region with others (i.e. physical and social properties such as climate or culture). As you develop these traits, you can ask instructor if you would like help identifying other adjacent or distant regions that similar to yours.
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| **Agrobiodiversity and Vulnerability/Resilience of Food Systems (Module 11)**Discuss the agrobiodiversity of the region using RACV concepts. Characterize the agrobiodiversity of the region (both major and minor crops and livestock) in order to be prepared to apply this discussion to each of the RACV concepts introduced in Module 11. * In particular, how does agrobiodiversity relate to resilience of the existing food systems? (be sure to characterize and include discussion of both the “modern industrial food system” and alternative food systems that may co-exist in the region)
* Similarly, how does agrobiodiversity contribute to the adaptive capacity of the existing food systems?
* And, finally, in particular how does agrobiodiversity relate to vulnerability of the existing food systems?
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| **Regional Food Security and Vulnerability (Module 11)**Discuss food insecurity/security and vulnerability of your assigned region.* How resilient or how vulnerable are the existing food systems in your assigned region?
* What are the vulnerabilities of the current systems with regard to human systems such as socioeconomic factors or transportation?
* What are the vulnerabilities of the current systems with regard to environmental factors?
* Do the different types of food systems differ with regard to vulnerability and, if so, how?
* Discuss food insecurity/security of your assigned region.
* Are there issues of food access that could be described as food deserts?
* Could the region experience a famine, or merely a sharp downturn in production? Is that happening now?
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| **Strategies for Sustainability (Module 11)**Propose strategies to enhance the sustainability of your assigned regional food system.* Are there other strategies for sustainability and resilience that would be appropriate in your region?
* Are there groups or individuals who are advocating new or different kinds of production in order to increase sustainability and resilience?
* Are there groups or individuals who are advocating new or different kinds of consumption and marketing in order to increase sustainability and resilience?
* Is there integration between strategies for sustainability and resilience for production and consumption?

*Tips to Start** You should search for agencies, organizations, or authors who are writing or advocating about these strategies in your region.
* You may wish to revisit the food tank “100 food organizations to watch” activity from the beginning of the semester.
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| Questions about your region? What additional information do you still need to find? Where might you find this information (add future references below)? |
| Future References and Key ResourcesInclude citations to newspaper articles, primary literature, databases, personal communications, etc. to information that might be useful in the future and aren’t already cited below.  |
| References Remember to use APA Format. |