



SUSTAINABLE BIOECONOMY
FOR ARID REGIONS

BUILDING EDUCATION CAPACITY FOR BIOECONOMIES

EXECUTIVE SUMMARY

> The SBAR Center of Excellence is a model for integrating innovative educational opportunities into all aspects of its research and development on sustainable bioeconomies. Educational components of the project engaged students from elementary, middle and high school, college, and graduate level through post-doctoral fellows.

> Five themes form the SBAR Educational framework, which are reflected in the educational resources available that enhance STEM learning:

1. Suitability for Arid Lands
2. Land Use and Culture
3. Building Bioeconomy
4. Plant Sciences and Sustainable Crops
5. Technology, Engineering, and Chemistry

SBAR ACCOMPLISHMENTS

> Reached over 1,700 youth through SBAR summer camps, after school programs, internships, and classroom-based activities.

> Developed a Sustainable Bioeconomy and Bioenergy (SBB) track within the Graduate Interdisciplinary Program at the University of Arizona.

> Implemented bioeconomy-based after school program, **"Guardians of the Biosphere."**

> Created real world STEM activities for in school and afterschool programs, 4-H, and other youth development opportunities.

> Downloadable materials include labs, detailed lesson plans and career videos.

KEY DETAILS

- > Created bioeconomy focused curriculum for middle and high school classrooms
- > Place-based curriculum grounded in real world STEM activities
- > Partnered with 8 school districts in Arizona and New Mexico



OPPORTUNITIES for EDUCATORS

- > Culturally inclusive STEM-based lesson and activity guides
- > Unique standards-based arid lands/ bioeconomy curriculum
- > Informal activity guides for hands-on exploration
- > Regionally focused interviews with local professionals
- > Connections to local and regional bioeconomy-focused professionals

POINT OF CONTACTS

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ADVANCING INNOVATIVE REAL WORLD STEM EDUCATION

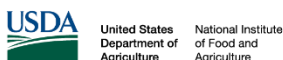
- > The SBAR education components create a framework for connecting students to concepts that build a more sustainable bioeconomy-based future for the arid Southwest. Curriculum engages students with real world STEM applications and builds connections to future job opportunities in the bioeconomy.
- > SBAR Education excelled at the creation of unique culturally relevant curriculum. SBAR Lotería is an innovative approach to teaching arid lands, sustainability, and bioeconomy concepts, and it can be adapted to a variety of formal and informal learning environments.
- > Educators have access to a broad range of curriculum to build a foundation for a sustainable bioeconomy in the Southwest.



WHAT IS STILL NEEDED

- > Integrated regional programs at community colleges in the Southwest for educating and training a workforce for bioeconomy opportunities.
- > Coordinate with industry partners to develop Certificate-based opportunities to meet workforce needs.
- > Expand career and technical education bioeconomy curriculum and apprenticeship programs.
- > Promote and support K-12 place-based STEM education related to arid lands and sustainability.

For more information: <https://sbar.arizona.edu>



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