ASU School of Sustainability

Arizona State University

schoolofsustainability.asu.edu

#1 BEST COLLEGES U.S.News MOST INNOVATIVE 2018

in the U.S. for innovation

#1 ASU #2 Stanford #3 MIT
– U.S. News & World Report
2016, 2017 and 2018

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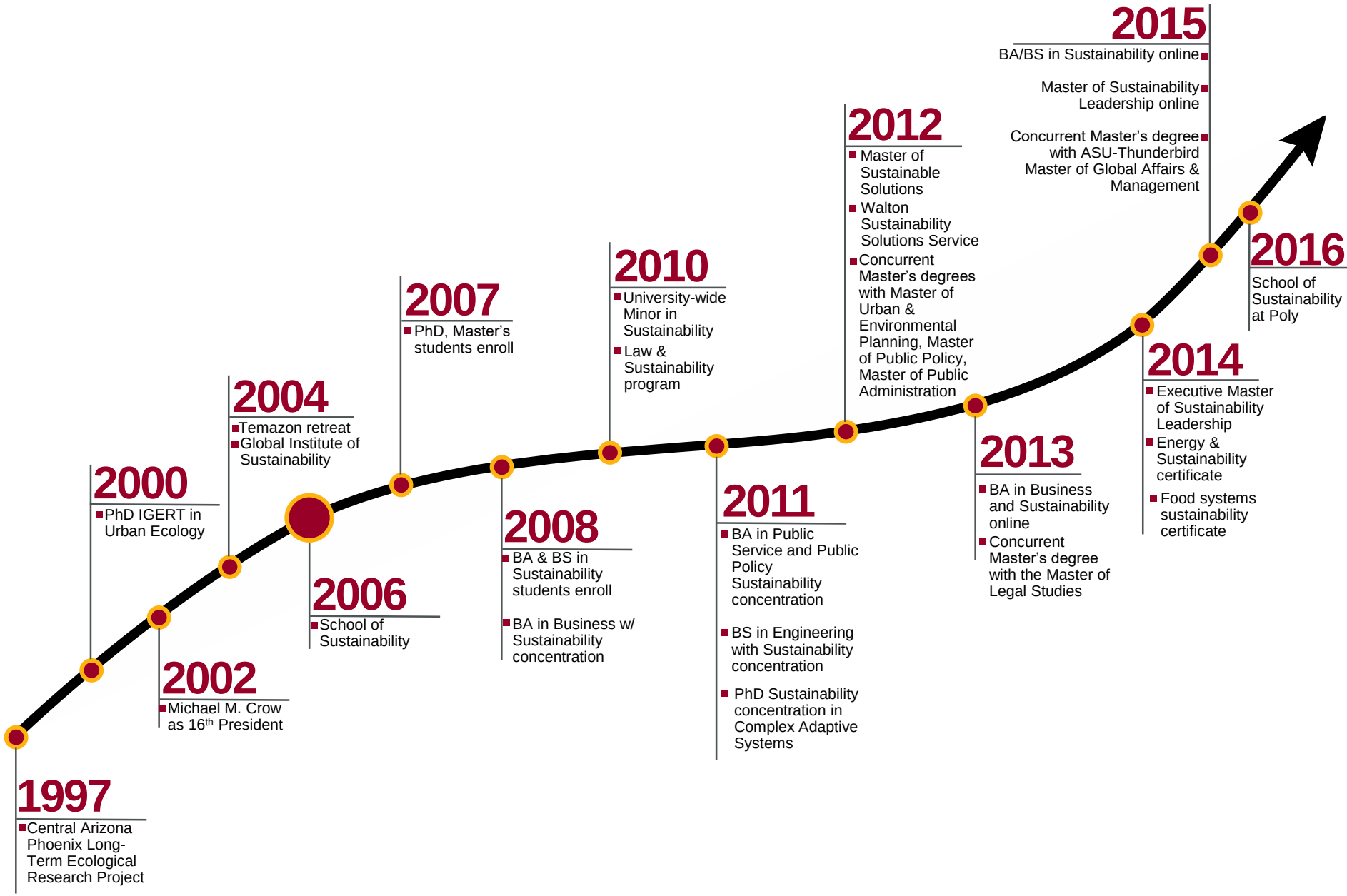

ASU SCHOOL of SUSTAINABILITY
ARIZONA STATE UNIVERSITY

Undergraduate Degrees

Bachelor of Arts

- Society and sustainability
- Policy and governance
- International development
- Urban dynamics

Bachelor of Science

- Energy, materials, and technology
- Economics
- Ecosystems

4+1 Accelerated degree (BA/BS + Master of Sustainability Solutions)

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Arizona State University

Graduate Degrees

Master of Arts in Sustainability

Master of Science in Sustainability

Master of Sustainability Solutions

Master of Sustainability Leadership (online)

Executive Master of Sustainability Leadership (hybrid)

Doctor of Philosophy (PhD) in Sustainability

Doctor of Philosophy (PhD) in Sustainable Energy

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Sustainability Competencies

1. **Systems thinking**
2. **Future thinking**
3. **Normative thinking**
4. **Strategic thinking**
5. **Collaborative thinking**

Sustain Sci (2011) 6:203–218
DOI 10.1007/s11625-011-0132-6

REVIEW ARTICLE

Key competencies in sustainability: a reference framework for academic program development

Arnim Wiek · Lauren Withycombe · Charles L. Redman

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Abstract The emerging academic field focused on sustainability has been engaged in a rich and converging debate to define what key competencies are considered critical for graduating students to possess. For more than a decade, sustainability courses have been developed and taught in higher education, yet comprehensive academic programs in sustainability, on the undergraduate and graduate level, have emerged only over the last few years. Considering this recent institutional momentum, the time is seemingly right to synthesize the discussion about key competencies in sustainability in order to support these relatively young academic programs in shaping their profiles and achieving their ambitious missions. This article presents the results of a broad literature review. The review identifies the relevant literature on key competencies in sustainability; synthesizes the substantive contributions in a coherent framework of sustainability research and problem-solving competence; and addresses critical gaps in the conceptualization of key competencies in sustainability. Insights from this study lay the groundwork for institutional advancements in designing and revising academic programs; teaching and learning evaluations; as well as hiring and training faculty and staff.

Keywords Education for sustainable development · Curriculum development · Sustainability expertise · Sustainability professional · Transformative learning

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Introduction

The emerging academic field focused on sustainability[1] aims to address complex anthropogenic challenges with a variety of research and teaching approaches that are problem driven and solution oriented (Kates et al. 2001; Clark and Dickson 2003; Swart et al. 2004; Komiyama and Takeuchi 2006; Grunwald 2007; Robinson 2008; Turner and Robbins 2008; Sarewitz and Kriebel 2010). The field's development is a response to existing and anticipated complex problems including climate change, desertification, poverty, pandemics, war—all featuring high degrees of complexity, damage potential, and urgency, and all having no obvious optimal solution. To solve these and other 'wicked' sustainability problems, the field generates, integrates and links use-inspired knowledge to transformational action in participatory, deliberative, and adaptive settings (Bäckstrand 2003; Grunwald 2004; Bammer 2005; van Kerkhoff and Lebel 2006; Blackstock and Carter 2007; Talwar et al. 2011).

The sustainability field has gained significant institutional momentum over the past few years, as mirrored in new academic journals and journal sections, conferences and symposia, academic societies, large-scale research projects, and educational advancements from general to higher education (Clark 2003; Rowe 2007; Kajikawa 2008).

[1] Some scholars articulate apprehension regarding the term 'sustainability science' (e.g., Hirsch Hadorn et al. 2006). Even if used in a broad sense including natural sciences, social sciences, and humanities, other important fields addressing sustainability issues such as engineering, business, design, and planning are not sufficiently captured and recognized under the term 'science'. With the formulation used above, we propose to overcome *all* of these demarcations as the field develops its genuine program beyond disciplinary anchoring (Wiek et al. 2010).

Wiek, Arnim, Lauren Withycombe, and Charles Redman. 2011. "Key Competencies in Sustainability: A Reference Framework for Academic Program Development." Sustainability Science 6 (2): 203–218.

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Systems Thinking

Analyzing how things relate to and affect one another in a holistic way

Example courses:

- Energy Efficiency in Policy and Practice
- Systems Thinking
- Sustainable Ecosystems

Futures Thinking

Envisioning desirable and possible futures

Example courses:

- Sustainable Urban Dynamics
- Futures Thinking
- Climate Science for Sustainability

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Values Thinking

Understanding how culture, tradition and values influence decisions

Example courses:

- Equity, Justice and Sustainability
- International Development and Sustainability
- Human Rights and Sustainability

Strategic Thinking

Developing a strategy or plan to achieve a particular vision

Example courses:

- Organizations, Sustainability & Public Policy
- Sustainable Development in Action
- Sustainability and Enterprise

Collaborative Competency

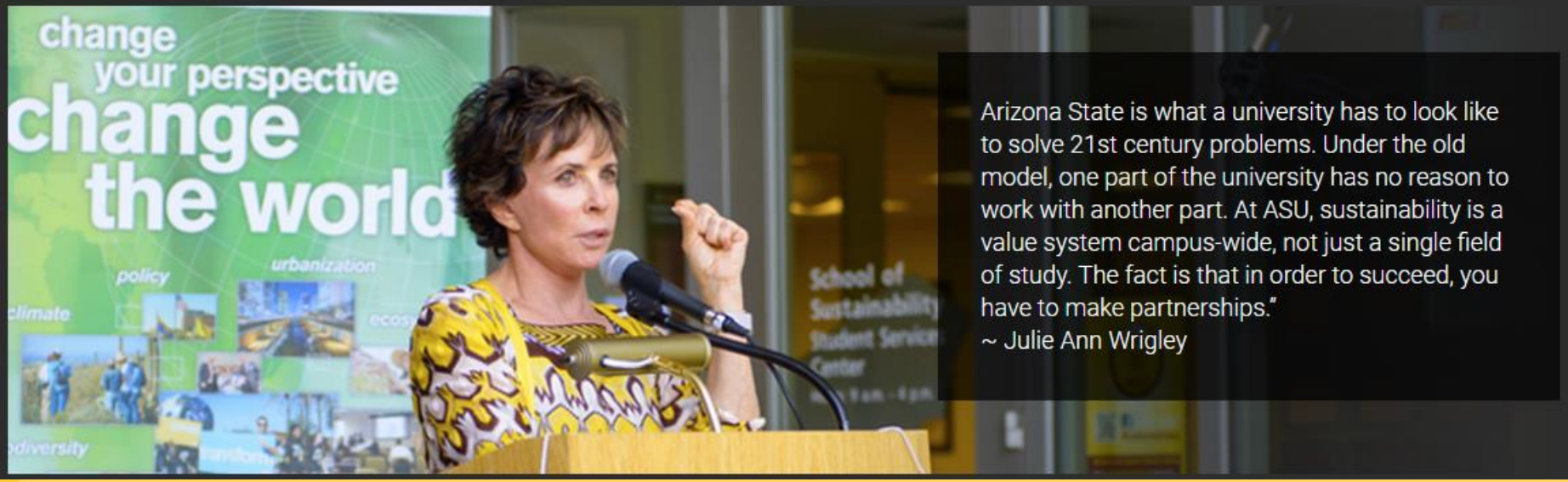
Working effectively with others to achieve a goal

Example courses:

- Innovation Space
- Urban sustainability Best Practices
- Professional Skills in Sustainability

Global Institute of Sustainability

Julie Ann Wrigley, on partnering with ASU



Arizona State is what a university has to look like to solve 21st century problems. Under the old model, one part of the university has no reason to work with another part. At ASU, sustainability is a value system campus-wide, not just a single field of study. The fact is that in order to succeed, you have to make partnerships."
~ Julie Ann Wrigley

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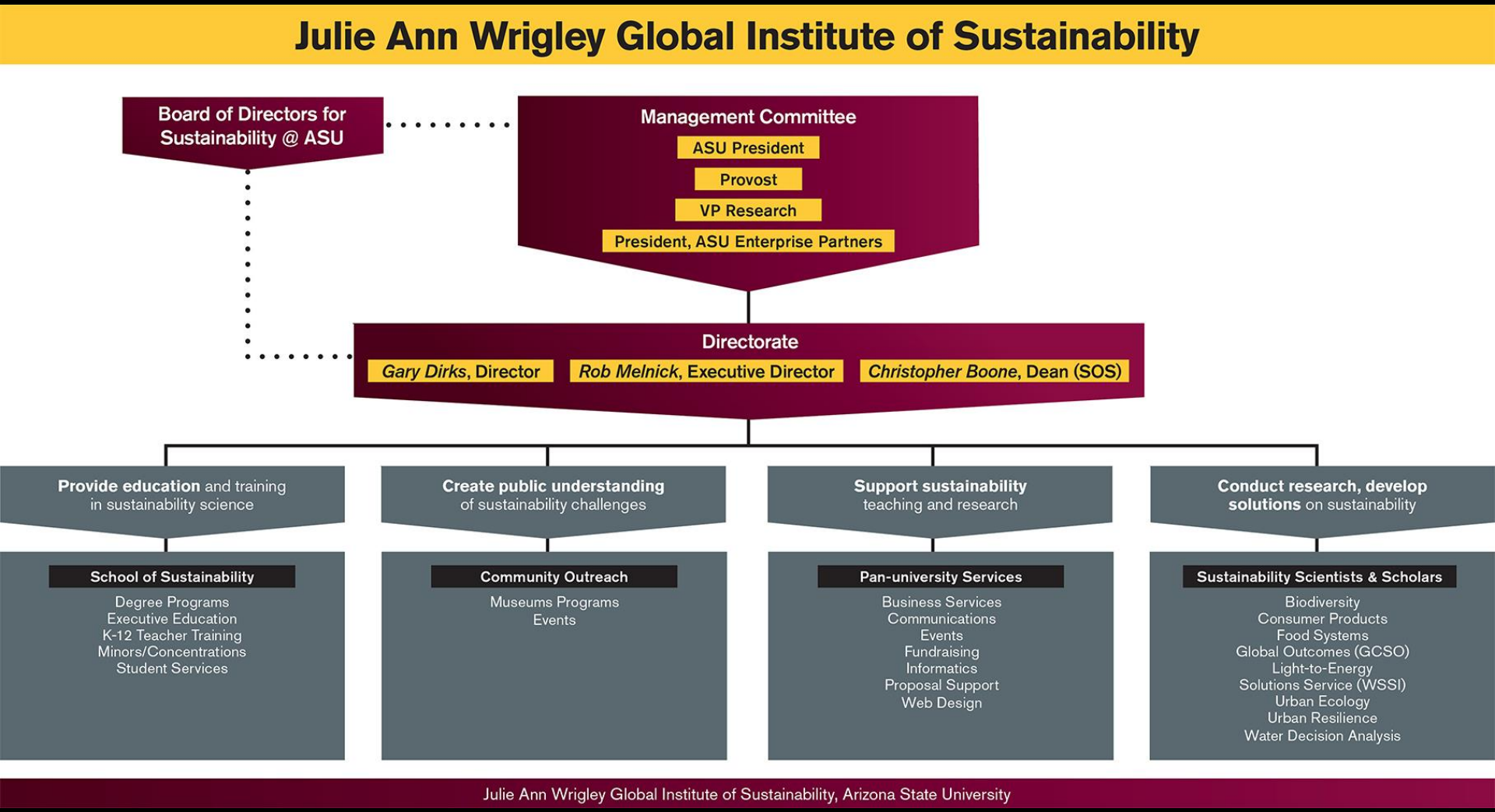
GIOS® organizational chart



Research


Center for Biodiversity Outcomes


CAP Long-Term Ecological Research


Decision Center for a Desert City


Environmental Humanities Initiative


Food Systems Transformation Initiative


Global Consortium for Sustainability Outcomes


LightWorks®


PlanetWorks

Resource Innovation and Solutions Network


Stardust Center


Sustainable Cities Network

The Sustainability Consortium

University Sustainability Practices

UREx Sustainability Research Network


Walton Sustainability Solutions Initiatives


More Global Programs at ASU

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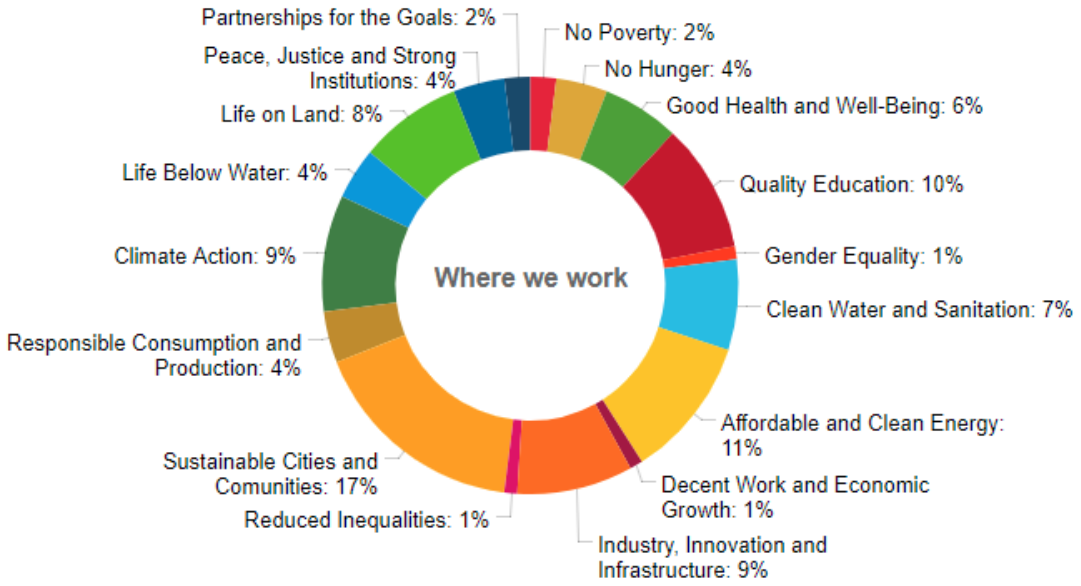
SUSTAINABLE DEVELOPMENT GOALS

Our scientists are working to advance the U.N. Sustainable Development Goals. Here's a snapshot from August 2016.



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