

establish graduate concentrations or sustainability degrees that have the rigour demanded by potential employers. To ensure that its graduates walk away with useful skills, the Patel College of Global Sustainability at the University of South Florida in Tampa undertook a six-month consultation with other colleges and relevant stakeholders — ranging from the Tampa Bay Regional Planning Council to Tampa Electric, the Sierra Club — an environmental organization based in San Francisco, California — and the International Ecotourism Society in Washington DC.

The discussions allowed the college to get down to the “nuts and bolts” of the expectations and requirements that employers have for students with a sustainability degree, says Kalanithy Vairavamoorthy, dean of the college. Desirable skills include systems thinking, strategic planning and return on investment for sustainable practices — which entails evaluating environmental performance (for example, gauging water and energy use and pollution loads), economic performance (such as efficiency gains) and social performance (including gains in green jobs). The college’s master of arts degree offers three concentrations: water, sustainable tourism and entrepreneurship, with courses covering topics such as sustainable business practices, environmental management and communicating the value of sustainability.

### SUSTAINABLE CAREER PATHS

Although unconventional, sustainability training has job potential. University of Washington graduates, for example, have been offered employment in local government, national agencies and universities. They might advise on smart-grid electrical technology and energy-use issues, or work in fisheries assessment or on clean-water issues, says Julia Parrish, associate dean for academic affairs and diversity at the College of the Environment. “They can point to a specific product they’ve done in graduate school,” says Parrish. “It lands them jobs and internships. It’s a fabulous way for students to gain that breadth and real-world sustainability and environmental-science experience while still becoming experts in their disciplines.”

Parrish says college directors were careful not to limit their graduates by establishing jack-of-all-trades degrees. “When we talked to employers, whether they’re top-tier universities, federal labs or large environmental non-governmental organizations,” she says, “they said ‘we want disciplinary experts with cross-cutting skills in communication, problem-solving and leadership.’”

James Thorson, now a population ecologist with the US National Oceanic and Atmospheric Administration’s National Marine Fisheries Service in Seattle, did a PhD in aquatic and fisheries studies at the college. Alongside his degree, he also conducted a

team-oriented project with a real-world business bent: he worked with the Washington Restaurant Association in Olympia to develop standards and guidelines for restaurant sustainability. Thorson focused on energy-efficient lighting, which pushed him out of his area of expertise and into one with varied stakeholders. He learned about everything from environmental auditing and certification programmes

**“Broad is not shallow. We need excellence in bringing things together.”**

to project management. Later, he used these skills in an outcomes assessment for the Marine Stewardship Council, an international organization based in London that establishes standards for sustainable fishing. Making the transition from research to team-based projects is a big jump, he says. “It requires a ton of skills that graduate students don’t learn when working individually.”

Tischa Munoz-Erickson, a research social scientist with the US Forest Service in Flagstaff, Arizona, who last year graduated from ASU with a PhD, says that she and many of her fellow students worried about the number and type of positions they would find upon graduating. But she has seen plenty of demand. “There’s such a need for people with this range of skills,” she says, citing problems such as climate change and water management, which require a knack for collaborating with multiple stakeholders and an expertise in a variety of subjects.

As a PhD student, Munoz-Erickson worked on urban sustainability with the Forest Service and San Juan Urban Long Term Research Area, an interdisciplinary network of scientists in Puerto Rico. She landed her current job shortly after she graduated. The ASU School of Sustainability, she says, taught her how to speak fluently to people in various social- and natural-science disciplines; showed her the limitations of science in informing policy; and prepared her to talk to ecologists, economists and geographers. “When fleshing out what makes a city sustainable or vulnerable, natural and social scientists realized that they had different meanings for these terms and that they valued things about the city differently,” says Munoz-Erickson. As part of her PhD project, she helped to facilitate collaborative meetings to develop a common vocabulary.

“With interdisciplinarity, I find it’s not so much that you’re knowledgeable about all these disciplines,” she says. “It’s about learning the way other disciplines think and their assumptions and methodologies. By looking at your problem from all these different perspectives, it enriches the way you do your own work.” ■

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### RECRUITMENT

## Biomedical hiring

Many biopharmaceutical companies plan to hire scientists in the next three years, according to a report published on 4 February by the PwC Health Research Institute in Washington DC, part of London-based professional-services firm PwC. *New Chemistry: Getting the Biopharmaceutical Talent Formula Right*, which is based on surveys of company executives and recruiters, finds that 72% of drug-makers plan to boost their research capacity in the next 12 months by hiring scientists, creating partnerships or improving infrastructure. The results of the survey suggest that jobs will grow by about 30% among US medical scientists, biochemists and biophysicists by 2020. Responding companies want recruits who can develop and manage external partnerships, and who know about regulatory science, bioinformatics and outcomes research. Early-career scientists looking for opportunities need to “think about the entire value chain that leads to the development of a drug or medical device”, says Christopher Khoury, a senior manager at the Health Research Institute and lead author of the report.

### UNIVERSITIES

## Ranking – system doubts

Members of the League of European Research Universities (LERU) do not plan to support the U-Multirank university ranking system launched last month by the European Union (see *Nature* 494, 273; 2013). LERU, which is based in Leuven, Belgium, and represents 21 universities across the continent, objects to what it calls a lack of reliable and objectively verifiable data in U-Multirank, problems in comparing institutions between countries, the temptation for universities to change policies or practices to improve their rankings and the burden on universities to collect data, says Kurt Deketelaere, secretary-general of the league. He says that such problems plague all existing university ranking systems, and notes that LERU pulled out of a U-Multirank advisory group in 2010 because its concerns were not addressed. “Since then, we have not seen any evidence of a substantive change of course which could lead us to revisit that decision,” says Deketelaere. Individual member universities can still participate in the programme if they choose, he says, but he notes that none has opted to join so far.