



Soaking up the sun on a vast scale at Ivanpah

Ivanpah needs all this money because BrightSource's technology requires it to be vast compared with other types of solar installation. Most solar power comes from photovoltaic cells that turn sunlight directly into electricity: installations of this type can be any size. BrightSource's system, like other "solar thermal" technologies, concentrates the sun's heat to drive turbines; and the high-performance steam turbines it relies on are big. The three to be installed at Ivanpah will together have a greater capacity than all the "utility scale" photovoltaic plants yet built in America.

It was once thought that photovoltaic installations might attain a similar size as they spread across America's West (a prospect viewed with alarm by some environmentalists). There are now indications that this won't happen. Nathaniel Bullard of Bloomberg New Energy Finance has been looking at photovoltaic projects registered with California ISO, the state's grid operator, since 2007. Their median size started off close to 100MW; now it is around 20MW. Not all these projects will be completed—but it seems a reasonable assumption that bigger ones may be more likely to fall by the wayside. If so, the average size will drop even more dramatically.

Mr Bullard thinks the photovoltaic business is learning that small, if not exactly beautiful, is easier to get past environmental controls and planning consents, and handier if you want to feed into existing grids. "Brownfield" industrial sites near towns beat desert skies.

This is not to say that big photovoltaic projects are finished. The day after the Department of Energy bestowed its beneficence on Ivanpah, it offered a conditional loan of \$1.2 billion to SunPower, a maker of high-efficiency photovoltaic cells, for a 250MW project, the California Valley Solar Ranch near San Luis Obispo. SunPower will build and operate the plant; NRG Solar, a subsidiary of NRG Energy of New Jer-

sey, will own it. (NRG Solar is also investing up to \$300m in Ivanpah.)

Such big projects make sense for large solar-cell producers like SunPower and Arizona-based First Solar, since they provide reliable demand with which to keep their manufacturing plants running at peak efficiency. Tom Werner, SunPower's chief executive, says that although the Solar Ranch project is "on the large side", there is a role for photovoltaic plants of all sizes, and his company has plenty more of similar scale

in the pipeline. As experience grows, he hopes to find banks, rather than governments, to finance them.

Whereas being extremely big remains optional for photovoltaics, for thermal-solar companies such as BrightSource it is a must. BrightSource hopes that in time its technology will prove sufficiently efficient and reliable to overcome the disadvantage of having to raise so much capital. If so, Ivanpah will be the ground on which it makes its case. ■

Italian industry

Clusters flustered

CASTELLANZA, SAN MAURIZIO D'OPAGLIO AND VALENZA

Global competition seems to be weakening the benefits of being in a cluster

OPENED in 1845, the Cantoni cotton mill in Castellanza went on to become the country's biggest but, burdened by debt, it closed in 1985. A large cluster of producers centred on the town, once called the Manchester of Italy, also perished. In Como, about 20 miles (32km) to the north-east, a cluster of silk firms is ailing, and so is a woollens cluster around Biella, 50 miles to the west, victims like Castellanza of low-cost competition.

Michael Porter, a guru on clusters at Harvard Business School, has said they help productivity, boost innovation and encourage new firms. For Mr Porter, firms' geographical proximity, their close competition with each other and the growth of specialised suppliers and production networks around them make a winning combination. Globalisation has, however, made this far less certain. More open trade and improved transport links may mean that bunching together in a cluster no lon-

ger offers such a strong defence against cheaper foreign rivals. Indeed, as Italy's medium-sized industrial firms adapt to the threat from China, the benefit they get from being bunched together in a cluster seems to be weakening.

More than 100 such clusters speckle the boot of Italy: tiles in Sassuolo, food machinery in Parma, sofas in Matera, footwear in Fermo and clothing in Treviso, to name just some. A few owe their existence to local natural assets—marble is quarried in the mountains behind Carrara, for example. But mostly they are the result of skills built up over successive generations. The packaging-machinery firms around Bologna grew out of the region's tradition of precision engineering, and the area around Belluno, where the first ever spectacles factory was built in 1878, is still home to a cluster of eyewear makers.

San Maurizio d'Opaglio, midway between Castellanza and Biella, is the

► world's largest centre for working brass. Workers there once made bells; now the cluster has around 380 firms that together employ about 10,000 people making valves and taps, businesses that took off with reconstruction after the second world war and the building boom that followed. About 19,000 are employed in small satellite firms involved in parts of the production process.

Founded in 1951, now employing 850 people who make brass valves, connectors and manifolds and turning over €165m (\$218m) last year, Giacomini is a giant of the cluster. However, quality certification, precision production and a catalogue of 6,000 products will not safeguard its future. "Germans saw us in the 1950s and 1960s as we now see Chinese products—low quality, low cost. Long-term, brass fittings are not enough. We do not expect to survive on these," admits Corrado Giacomini, the chairman. The firm began diversifying into electronic controls and heating and air conditioning systems ten years ago, and this move away from its traditional business means that its links to the cluster look increasingly less relevant to its future.

Zucchetti, a tapmaker in the nearby town of Gozzano, has also changed strategy. As well as buying a maker of luxury baths and basins, it has shifted production upmarket, with smaller production runs and a larger product range. How Zucchetti performs in the future depends less on being in the cluster than designing smart products and defending its brand. A recent report from Intesa Sanpaolo, a bank, notes how competition is forcing firms to innovate, improve quality and build brands.

Firms in a jewellery cluster in Valenza, in southern Piedmont, hope to protect their businesses with help from the regional authorities, the creation of a group trade mark and peer pressure to keep skills in the cluster. Bruno Guarona, chairman of the jewellers' association, moans about unfair competition from China, where labour regulations are lax and firms enjoy tariffs and duties that undercut those his members face. But he reserves special bitterness for jewellers from Valenza who have moved production abroad, "traitors who have committed a crime".

Indeed, fragmentation of production and outsourcing abroad, clear signs that firms have become less competitive, weaken the networks on which clusters are built and may even destroy their competitive advantage, warns Rodolfo Helg, an economics professor at the university in Castellanza, which occupies the buildings that were once the town's large cotton mill. He believes successful clusters in the future will be very different from those of the past. Britain's large manufacturing clusters withered and died. The risk for Italy is that the decline of its clusters will prove as terminal elsewhere as it was in Castellanza. ■

Facebook's legal cases

Friends and enemies

As one legal battle over Facebook fades, another moves forward

JUST when it looked as though the fuss over Facebook's early days might be about to die down, the long-running legal soap opera over the rightful ownership of the online social network has sprung another surprise. On April 11th Paul Ceglia—who last year filed a lawsuit claiming entitlement to half of the stake held by Mark Zuckerberg, Facebook's youthful co-founder—submitted an amended complaint complete with e-mails that he claimed would support his case for a share in the company.

Mr Ceglia's bombshell was dropped on the same day that Facebook's boss received some better news. A panel of federal appeal-court judges in San Francisco handed down a decision that probably scuppers another legal challenge over his company's ownership. The judges threw out a petition by two of Mr Zuckerberg's contemporaries at Harvard University, Cameron and Tyler Winklevoss—twins dubbed "the Winklevi" by their fellow students—seeking to scrap a settlement they had reached with Facebook in 2008. In that settlement, reportedly worth \$65m, the Winklevosses and Divya Narendra, another former Harvard student, had dropped their claim that Mr Zuckerberg stole their idea for a social-networking service.

Since then the value of Facebook has soared (it is now said to be worth up to \$60 billion), which may have prompted the Winklevosses to try to get the settlement scrapped so they could fight for

more generous terms. But the judges rejected their argument that they had been misled about the true value of Facebook when the deal was signed. "The Winklevosses are not the first parties bested by a competitor who then seek to gain through litigation what they were unable to achieve in the marketplace," wrote one judge. "At some point litigation must come to an end," he added. "That point has now been reached." The Winklevosses' lawyer indicated that they might nevertheless fight on.

Mr Ceglia, meanwhile, has engaged DLA Piper, a big law firm, to represent him over his claim that a contract he allegedly signed with Mr Zuckerberg in 2003 entitles him to a share in the firm. The deal supposedly involved Mr Ceglia giving Mr Zuckerberg \$1,000 to develop the website, and a further \$1,000 for work on another project, in return for a substantial chunk of any future business.

Lawyers for Mr Zuckerberg and Facebook dismiss Mr Ceglia's claim, arguing that the e-mails he has produced to support it are fakes. Some of these purportedly show Mr Zuckerberg discussing the site's development with Mr Ceglia and giving warning of a potential rival service being developed by nameless fellow students (presumably the Winklevosses and Mr Narendra). The courts will need to be convinced not just of the e-mails' authenticity but of Mr Ceglia's explanations for why he waited seven years before coming forward to stake his claim.



Not a good day for the Winklevi