

## What's a cleantech cluster?

Indeed, many people may have not heard the term, although it could quickly gain currency as people increasingly realize the tremendous opportunities offered by the cleantech sector.

For purposes of this list, we define a cleantech cluster organization as an economic development organization aimed at growing jobs in a specific geographic region. Among a cleantech cluster's main goals are to promote innovation and investment.

Creating such a cluster is no simple task. First, the right circumstances must be present: A thriving technology base, abundant entrepreneurial and management talent, access to capital, and a proactive environmental public policy. It's not easy to create, but once in place, a cleantech cluster can, in theory, create thousands of new jobs and attract billions of investment dollars to a region.

Which regions have managed to best attract and leverage these key ingredients to help create the world's best cleantech cluster organizations? Here's one observer's top 10 list:

1. **Austria Eco World Styria**, Graz Austria - Eco World Styria bills itself as Europe's Green Tech Valley. The small region of Styria in Austria is home to more than 150 cleantech companies, of which one dozen are world technology leaders in their field. The cleantech revenue of Styrian companies totals €2.7 billion. This equals to 8 percent of the Gross Regional Product (GRP), and is one of the highest concentrations of leading clean technology companies in Europe. The companies have an average (real) growth rate of 22 percent per year—well above the worldwide cleantech market growth of 18 percent per year. The region created roughly 2,000 additional green jobs in 2008 alone. Among the key reasons for the area's phenomenal performance: Numerous specialized research centers, a strong tradition of engineering as well as a leading research quota of 4.3 percent of the GRP. That's why Styria is, despite its small size, one of the largest clusters in Europe. Cluster success stories include: Andritz AG, Kompotech, KWB Biomass Heating Systems, Binder+c.
2. **The New England Clean Energy Council**, Cambridge Massachusetts - The New England cleantech economy could bring in \$1 billion in investment by 2012, the region believes, and the New England Clean Energy Council is at the forefront of this opportunity. Formed in 2007, the council's mission is to accelerate New England's clean energy economy and elevate it to a position of global leadership by building an active community of stakeholders and a world-class cluster of clean companies. The council represents nearly 150 members, comprising clean energy companies, venture investors, major financial institutions, local universities and colleges, industry associations, area utilities, labor and large commercial end-users. Its ranks include more than 50 clean energy CEOs, representatives from most of the region's top 10 law firms, and partners from over a dozen of the region's top venture capital firms (with a total of over \$8 billion under management). Working with its stakeholders, the council develops and executes an array of programs in five key focus areas: Innovation, Growth, Education and Training, Adoption, & Policy. Cluster success stories include: **Ze-Gen**, Seven Solar, Next Step Living.
3. **Finnish Cleantech Cluster**, Lahti Finland - The Finnish Cleantech Cluster is a true Finnish success story. The cluster features access to over 250 Cleantech companies, 60 % of Finland's Cleantech business and 80 % of Cleantech research in Finland. Lahti Science and Business Park is the coordinator of the Finnish Cleantech Cluster. Among the primary goals of this cluster is to create + 40 new high-growth companies annually, a goal which has already been reached. It also aims to increase Cleantech VC investments to 15% of total investments. In terms of job creation, the Finnish Cleantech Cluster has created + 500 new green job, and the target for this year is more than 900 new positions. Lahti has an excellent overview of the general deal flow, + 100 investment cases, in Finland. The market operations in November 2009 are covering Russia, China with FECC, and India, through the strategic collaboration with YES Bank India. LSBP hosts numerous cleantech investor events

annually like cleantech workshops and Cleantech Venture Day. Cluster success stories include Eagle Windpower, EcoCat, Numcore and Green Stream Network.

4. **MaRS**, Toronto Canada - Canada's MaRS is a large scale, mission-driven innovation center located in Toronto and networked across Canada. It is focused on building Canada's next generation of cleantech companies. Led by Tom Rand, a veteran entrepreneur, policy advocate, and venture capitalist, the Cleantech Practice at MaRS has quickly established itself as the largest Cleantech deal-flow engine in the country. Founded last year, the Canada MaRS Advisory Services team has already worked with over 250 cleantech companies from across the province. MaRS provides business advice and mentorship, market intelligence, entrepreneurship education, seed capital and access to critical talent, customer and partner networks. MaRS brought five of its cleantech stars to the Cleantech Group's **Boston Forum**, and will bring five more to this week's **San Francisco Forum**. MaRS is the largest cleantech deal-flow engine in Canada. Cluster success stories include: **Morgan Solar**, NIMTec, Hybrid Energy Technologies, and **SkyMeter**.
5. **Copenhagen Cleantech Cluster**, Copenhagen Denmark - Copenhagen has a stated goal of becoming the world's first CO2-neutral capital. Danish cleantech solutions are world famous, and Denmark is one of world's largest exporters of cleantech as measured by GDP. The Copenhagen Cleantech Cluster cluster comprises 40 players, and the aim is to total 200 by 2013. The Copenhagen Cleantech Cluster operates under a \$30 million budget financed by the EU, Region Zealand and the Danish Capital Region. It also has a unique set of partners, including Copenhagen Capacity, Scion DTU, Confederation of Danish Industries (DI), Risø DTU, University of Copenhagen as well as a number of municipalities and huge companies including Dong Energy, Vestas, Haldor Topsøe, Novozymes, Siemens and Better Place Denmark. Specific goals include the creation of 1,000 new jobs and 10 public-private sector partnerships, the staging of 200 events, the involvement of more than 200 players as well as collaboration with 15 international Cleantech clusters. Cluster success stories include: **Stirling DK**, **PhotoSolar**, EcoXpac and Better Place Denmark.
6. **The CleanTech Center**, Syracuse New York - You've heard of the big apple. The green apple is Central Upstate New York. With 38 colleges and universities, 138,000 college students, \$2 billion in annual funded R&D and a green landscape that supports clean energy production, NY's "green core" is launching and growing clean tech enterprises. **The CleanTech Center** at the Syracuse-based Tech Garden, and **The Syracuse Center of Excellence in Energy and Environmental Systems** are at the forefront of the green innovation movement, supported by the New York State Energy Research and Development Authority, making it one of the best-funded programs in the U.S. The CleanTech Center is a cutting-edge clean energy incubator that links entrepreneurs, investors and academic researchers, and is also a clearinghouse of information on the cleantech sector in New York State. Successes include: The Paper Battery Company, MicroGen Systems and Earthsense.
7. **CleanTECH San Diego**, San Diego, California - With an estimated 650 cleantech companies in the region, San Diego is emerging as a global leader in cleantech. Led by an initiative of San Diego Mayor Jerry Sanders, CleanTECH San Diego has developed a comprehensive one-stop-shop and vibrant ecosystem for clean tech companies to accelerate their growth. San Diego already has a track record. Having less than a third the population of Los Angeles, San Diego has installed 60% more solar roofs than its neighbor to the north. In July 2009, San Diego was recognized as the leading solar city in the No. 1 solar state, with over 2,200 rooftop installations and the most solar capacity in the state. Cluster successes include Siliken Renewable Energy, Clear Edge Power, **Synthetic Genomics** and **Sapphire Energy**.
8. **Environmental Business Cluster**, San Jose, California - Established in 1994, the Environmental Business Cluster (EBC) is a nonprofit technology commercialization center created to assist early stage for-profit companies developing products or services intended to have a positive impact on the environment. Since 2003, the EBC has specialized in assisting clean energy and emerging energy efficiency companies and has also been working with the California Energy Commission and the National Renewable Energy Lab to provide

commercialization services to selected applied research grant recipients. Today, the EBC manages the largest private technology commercialization program for clean energy start-ups in the United States. The EBC is sponsored by the San Jose Redevelopment Agency in partnership with the San Jose State University Research Foundation. Success stories include GreenVolts, ElectraDrive, Optony, Armageddon Energy, and New Power Technologies.

9. Stockholms Miljöteknikcenter, Stockholm, Sweden - The Stockholm cleantech sector, including Uppsala to the north and renowned cleantech related research environment Ångströmlab, has created cleantech jobs for some 25,000 employees estimated. The region is also home to an internationally well known sustainable city area in Hammarby Sjöstad (just to the south of downtown Stockholm) and one emerging in nearby Norra Djurgårdsstaden. Stockholm was chosen as Environmental Capital of the year 2010 by the European Commission, and is home to cleantech investors Sustainable Technologies Fund, Northzone, Pegroco Invest and Stora Enso Ventures, and is also home to the office of Cleantech Scandinavia. Cluster success stories include Vertical Wind, Seabased, Chromogenics Sweden, Climatewell, Scandinavian Biogas.
10. Ontario Clean Water Initiative, Toronto, Ontario - The Ontario Clean Water Initiative is a collaboration of organizations dedicated to developing Ontario as a global center of expertise for safe, clean, affordable and sustainable water and sanitation solutions. Ontario has considerable water related assets, from one of the largest bodies of fresh water in the world to a strong regulatory regime, an internationally recognized research community, and an established track record in world class water tech (e.g. ZENON, acquired by GE, and Trojan Technologies). Over 300 local companies are developing wastewater, water treatment and filtration related products and services. The province is home to 230 relevant university and college programs that produced over 8,200 university graduates related to water sciences in 2007. Entrepreneurs have access to R&D tax credits and specialized water investors such as XPV Capital Corporation, Sustainable Development Technology Canada and Emerald Technology Ventures. Successes include Altech Technology Systems, EnviroTower, UV Pure, Green Turtle and Petro Sep Membrane Technologies.

Source: Cleantech Group, LLC