

CNS-UCSB

Center for Nanotechnology in Society



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Solar Energy: US vs. EU

Diversity and Innovation

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CNS Summer Internship Program

INSET & SBCC & UCSB



*“Energy is the single most important challenge facing humanity today.”
(Nobel Laureate Rick Smalley)¹*

Global Picture

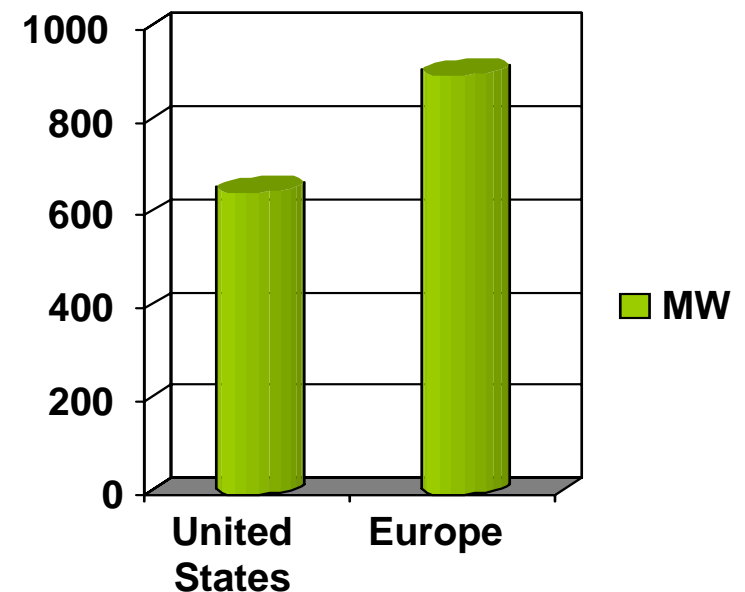
- Global need for renewable energy.
- Solar energy has great potential (1 hr. = 14 TW.)¹
- Different generations of solar:
 - a. traditional PV
 - b. thin films (Nano-solar)

*“To change the world is not enough...Our job is to interpret it.
This is so that the world does not continue to change without us. And,
eventually, does not change in a world without us” (G. Anders)*

Innovation Pathways

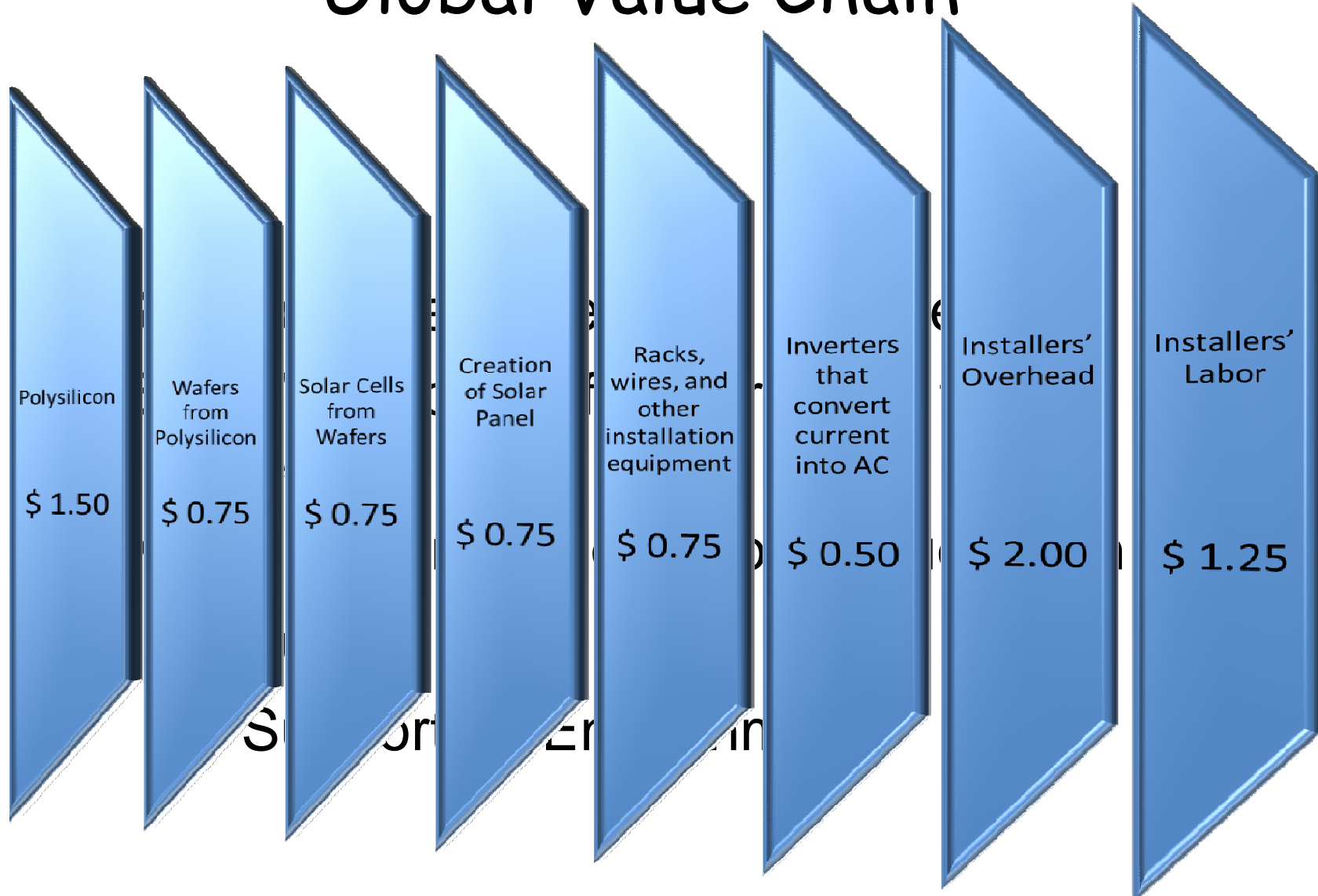
- Global value chain
- Statistics
- US vs. EU

Production of PV, 2006





Global Value Chain





Solar Global Value Chain

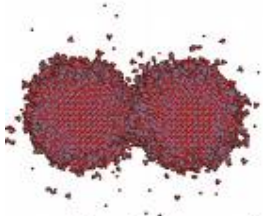
The research process

- Production process
- Decide where to start from:
 - The logo for KONARKA, featuring a yellow triangle with a sunburst pattern inside, and the word 'KONARKA' in blue capital letters below it.
 - The logo for HELIOS TECHNOLOGY, featuring the word 'HELIOS' in red capital letters with a sunburst pattern inside the 'O', and the word 'TECHNOLOGY' in red capital letters below it.
- Company profile and partners
- Supporting environment per country
- Research further supporting material
 - World Intellectual Propriety Organization: Patents

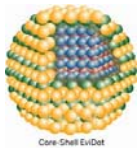
Nano-solar Value Chain

KONARKA

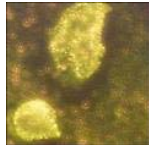
Nano-Material



Ceramic Nanoparticles



Quantum Dots



Gold Nanoparticles

Nano-intermediates



Thin Film



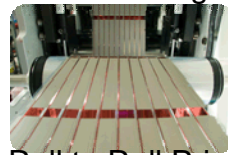
Evident Technologies: EviDots



Solaris Nanoscience Nano-antenna



Textronics: clothing with power



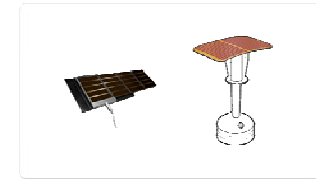
Kurz: Roll to Roll Printing Process

Nano-products



- Solar Cells
1. Dye- sensitized
 2. Organic
 3. Hybrid

Applications



Portable Power



Out-door power

Indoor

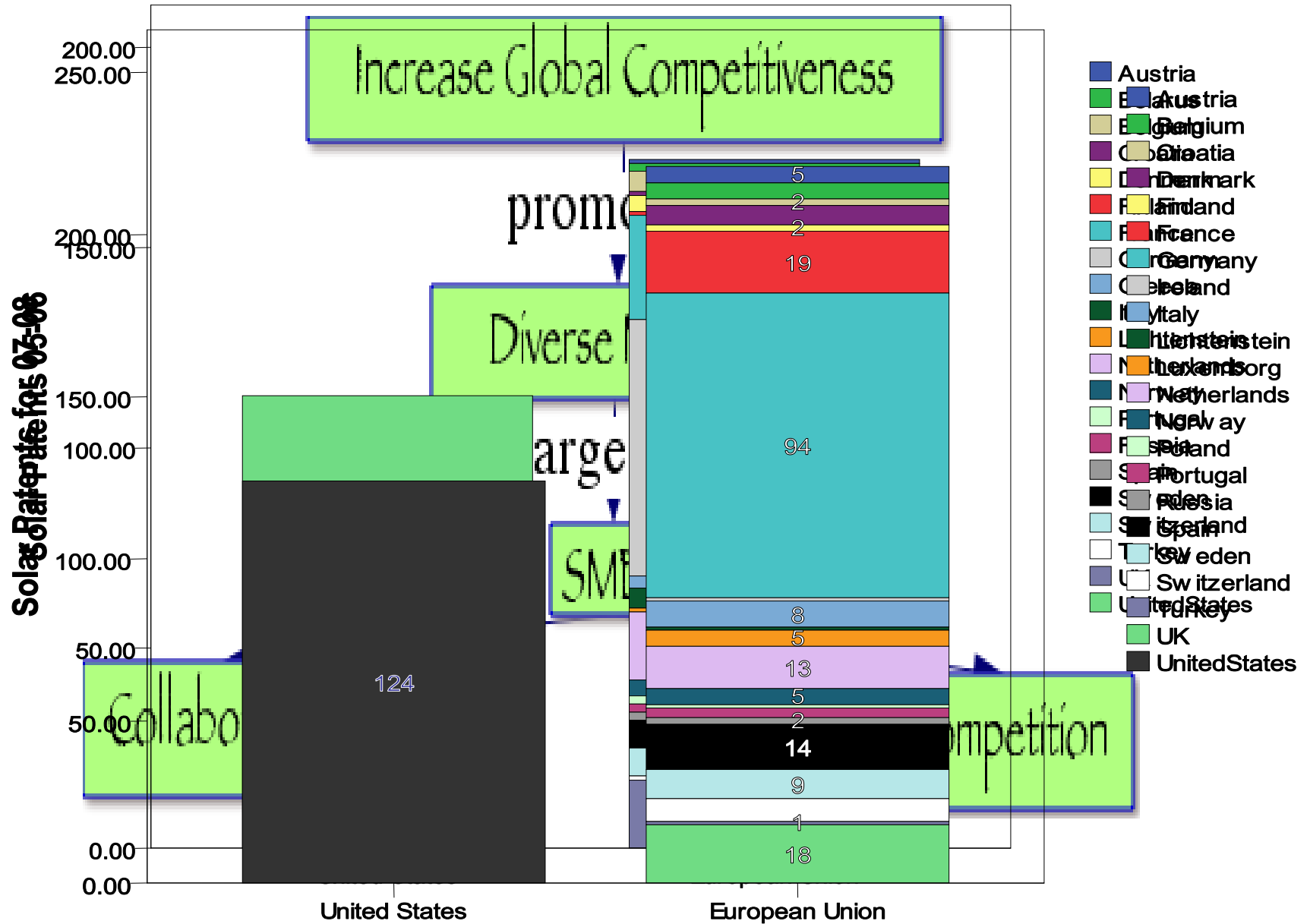
Remote Sensing



Military Equipment

Consumer Applications

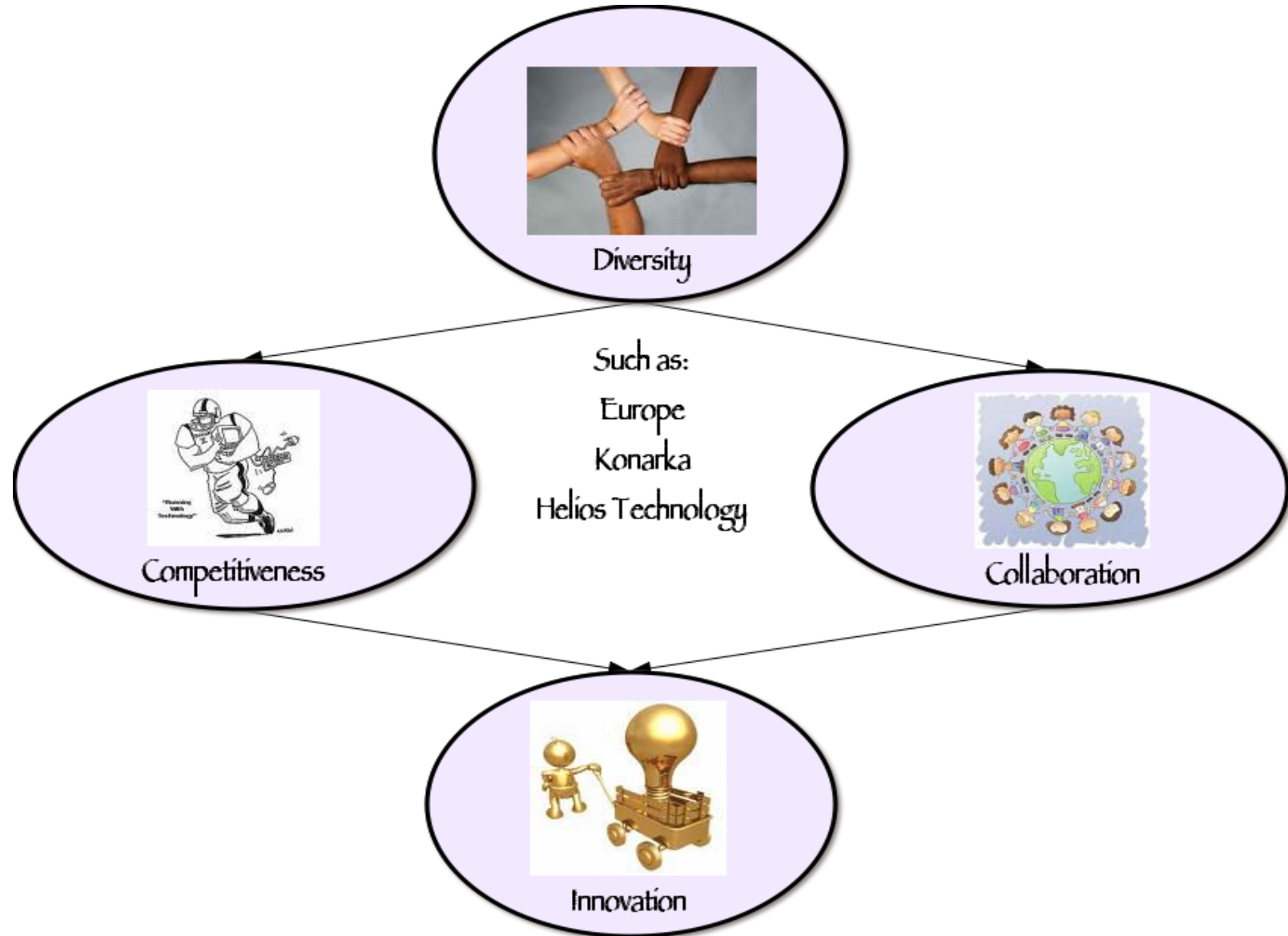
EU on International Scale



EU on National Scale



Final Picture



“...so that the world does not continue to change without us. And, eventually, does not change in a world without us” (G. Anders)

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Works Cited (TO FINISH)

- 1) Nathan, Lewis S. "Powering the Planet." California Institute of Technology. 27 June 2008 <<http://nsl.caltech.edu/energy.html>>.
- 2) Frosch, Dan. "Citing Need for Assessments, U.S. Freezes Solar Energy Projects." The New York Times 27 June 2008. 27 June 2008
<http://www.nytimes.com/2008/06/27/us/27solar.html?_r=1&scp=1&sq=solar&st=nyt&oref=slogin>.
- 3) "European Legislation." EPIA. European Photovoltaic Industry Association. 8 July 2008 <<http://www.epia.org/index.php?id=5>>.
- 4) "Conto Energia." Helios Technology. 8 July 2008
<http://www.heliotechnology.info/?pag=CONTO_ENERGIA>.

