Alternative Energy

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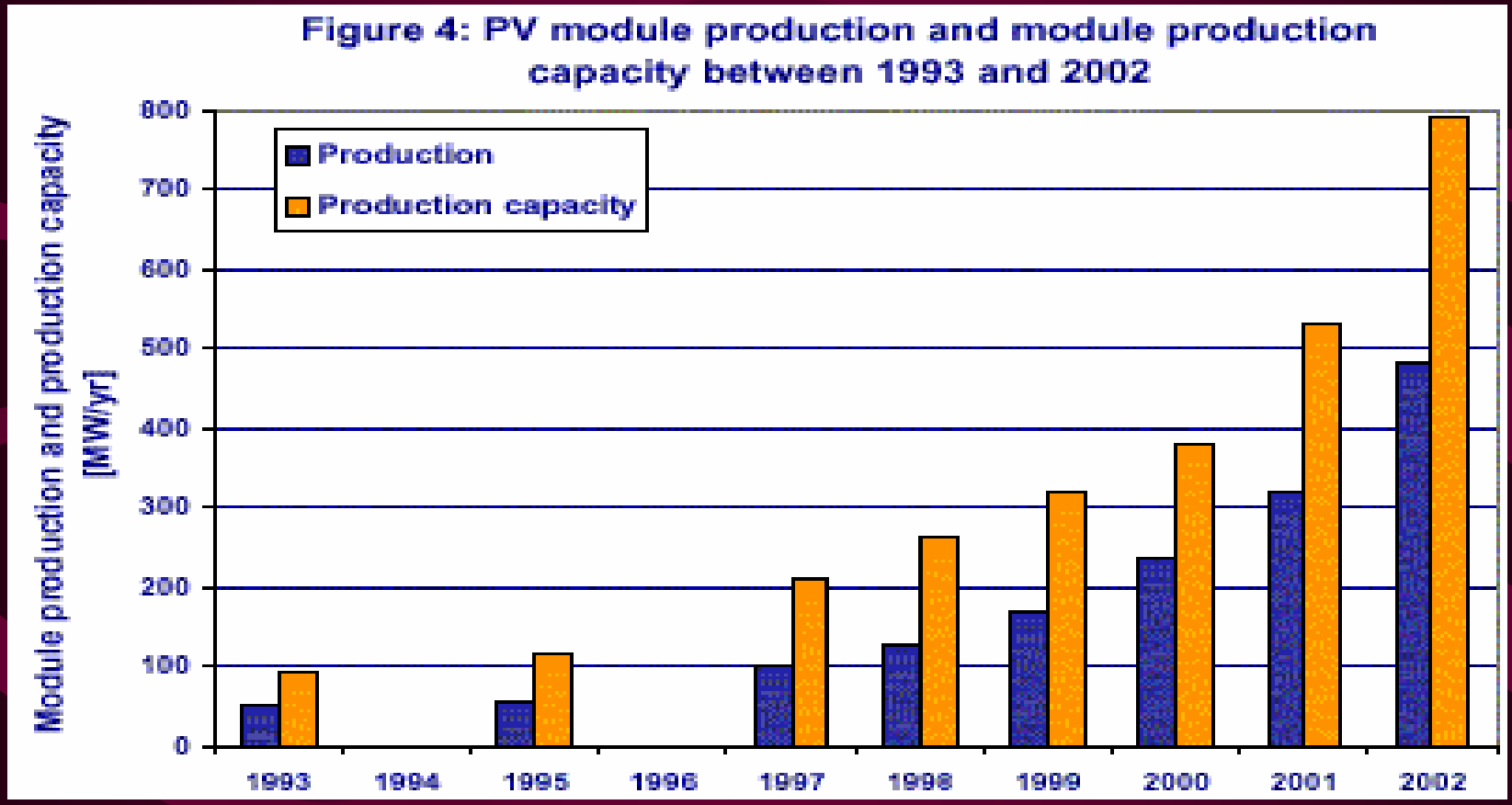
Alternative Energy - A Global Status Report

- Solar Photovoltaic
- Wind
- Biofuels
- Geothermal
- Hydrogen
- Wave/Tidal
- Energy Efficiency

Solar PV Highlights and Trends



Solar PV Highlights and Trends

- June 2002 - $5.65/Watt Avg. Module Price
- June 2003 - $5.03/Watt;
- June 2004 - $4.96/Watt
- Lowest retail price $3.20/Watt (Kyocera)
- Large volume prices at $2.70/Watt and below)
- Module cost = 45-55% of total system cost

Flexible Solar Cells

Wind Highlights and Trends

- Wind is the least expensive electrical energy supply technology in the world today
- Widespread use of onshore applications in Europe; onshore applications in the US and Australia

  Global wind energy generating capacity now exceeds 39,000 MW

Wind Highlights and Trends

- Wind generating capacity increased by 8,000 MW in 2[illegible] 28% increase
- $9 billion invested in new wind power 2002
- Growth forecast in double digits in the next decade

  Top 5 markets - installed capacity (Germany, US, Spain, Denmark, India)

Biofuels Highlights and Trends

- Growing industr[illegible]or biod[illegible]l fuels
- Electricity ger[illegible]on from waste[illegible]thane (wastewater t[illegible]atment plants, landfi[illegible] anim[illegible]
- Specialized [illegible]arke[illegible]s fo[illegible]lectricity [illegible] agricultura[illegible]nd forestry re[illegible]lues combustic

Geothermal Highlights and Trends

- High and low temperature systems
- 8,000 MW of geothermal electricity produced globally
- 2,800 MW of geothermal electricity produced the US
- Other major producers of geothermal energy: Iceland, New Zealand
- Energy cost about 4-6 cents per kWh in the US, 2 cents per kWh in Iceland

Hydrogen Highlights and Trends

- Hydrogen generati[illegible]echnol[illegible]gies are well-developed (steam [illegible]eformation of n[illegible]l gas and electrolysis of w[illegible]er)
- Major governm[illegible]t and indu[illegible]l commitme[illegible] hydrogen infr[illegible]ra[illegible]d end-u[illegible]plications
- Remaining b[illegible]ers[illegible]e: wi[illegible]read avail[illegible]y of hydrogen ar[illegible]os[illegible] of end-use a[illegible]plications (primarily f[illegible]ell catalysts)

Wave/Tidal Highlights and Trends

- Almost unlimite[illegible] energy p[illegible]tential of waves and tides
- 3 tidal projec[illegible] to-date worldwide (F[illegible] Canada, Ru[illegible] from [illegible] MW
- Potential is [illegible]e sp[illegible] specially [illegible] tidal power (tid[illegible] change betwee[illegible] land masse[illegible]
- World's f[illegible] wave energy system - Isle of Is[illegible] in t[illegible] UK (Wavegen)

Energy Efficiency Highlights and Trends

- Energy efficient investments offer the quickest return on investment over any supply technology
- Implementing efficiency standards will avoid the need to construct up to 150 new power plants over the next 15 years
- From 1970 to 2000 U.S energy consumption grew 45% while the U.S. GDP increased 160%. Efficiency is a smart business - PERIOD!