Climate change poses a major risk to the global economy. Worldwide economic losses due to natural disasters appear to be doubling every 10 years and, on current trends, annual losses will reach almost $150 billion in the next decade.

Support for SEFI comes from The United Nations Foundation. UNF promotes a more peaceful, prosperous, and just world through the support of the United Nations and its Charter.

UNEP DTIE
The UNEP Division of Technology, Industry and Economics (DTIE) helps decision makers in government, local authorities, and industry develop and adopt policies and practices that:
- Are cleaner and safer;
- Make efficient use of natural resources;
- Incorporate environmental costs; and
- Reduce pollution and risks for humans and the environment.

UNEP DTIE
Division of Technology, Industry and Economics
39-43, Quai André Citroën
75739 Paris Cedex 15
France
INTERNET: www.unepdtie.org

Photos courtesy Neg-Micon. Data on renewable energy investment and installed capacity courtesy Eric Martinot and NREL.

UNEP FI 2002 Study
Creating the Climate for Change

The global energy industry powers an incredible global economy, but the reliance on fossil fuels also creates serious environmental and social impacts. Local air pollution, regional acid deposition and global climate change affect us all, regardless of our local address.

In many developing countries, the economic benefits derived from access to a modern energy system are elusive, although the environmental costs from using basic fuels are not. Nearly three billion people - half of the world’s population - rely on biomass, charcoal and kerosene for cooking and heating in simple devices, producing large amounts of indoor and local air pollution that is linked to between four and five percent of the global disease burden.

Providing modern, clean, affordable and secure energy services is thus a substantial challenge, but one where renewable energy and energy efficiency – sustainable energy - can make a significant contribution. Technologies such as wind generators and solar cells have advanced rapidly and their costs continue to decline. However, achieving mainstream primary and secondary markets for sustainable energy applications will require a new level of engagement from the finance sector.

Superficially at least, money does not seem to be the problem – billions of dollars will continue to be invested each year in the development of global energy systems. It is, however, the nature of these investments in highly damaging fossil fuels that is the cause for concern. Further, if the fossil fuel ‘business as usual’ mindset continues in the planning and financing of future energy infrastructure, the resulting serious and irreparable environmental and social harm could dramatically affect the health of human societies, economies, and the ecosystems on which they depend.

But there are promising trends. Investment companies representing $4.7 trillion under management have joined under the Carbon Disclosure Project to request that Fortune 500 companies disclose their carbon emissions, while both carbon offset and sustainable energy funds have been capitalised to invest several hundred million dollars in sustainable energy infrastructure.

Clearly, if present trends continue, the risk to global societies and economies from environmental degradation, climate change, and the continued poverty of the world’s poor will increase. Instead of climate change from continued investment in fossil fuels, we need to create the climate for change towards a sustainable energy path.
UNEP is working to create the policy and economic framework where sustainable energy can increasingly meet the global energy challenge. Changing attitudes and helping mainstream financiers to consider sustainable energy investments are key components of the energy work within UNEP and the starting point for the UNEP Sustainable Energy Finance Initiative (SEFI).

SEFI provides current and targeted information to financiers and facilitates new economic tools that combine social and environmental factors – both risks and returns – as integral measures of economic performance.

SEFI is modelled in part on the UNEP Finance Initiative (UNEP FI) as a platform to provide financiers with the tools, support and networks to drive financial innovation that improves the environmental performance of the energy mix. The overall strategy is to use this platform and modest amounts of capital to convene financiers, engage them to do jointly what they may have been reluctant to do individually, and to catalyse public-private alliances that together share the costs and lower the barriers to sustainable energy investment.

**Annual investment in renewable energy**

<table>
<thead>
<tr>
<th>Year</th>
<th>$0</th>
<th>$2</th>
<th>$4</th>
<th>$6</th>
<th>$8</th>
<th>$10</th>
<th>$12</th>
<th>$14</th>
<th>$16</th>
<th>$18</th>
<th>$20</th>
<th>World Total ($ billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$2</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$4</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$6</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$8</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$10</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$12</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$14</td>
<td></td>
</tr>
</tbody>
</table>

**Contact us**

To join this new investment path, contact us at the numbers above, visit http://sefi.unep.org or email sefi@unep.fr
The scope of SEFI includes renewable energy and energy efficiency investments in both developed and developing countries, including climate change and carbon trading activities related to sustainable energy.

To address the need for the finance community to include environmental and climate issues in their investment decisions for new or replacement energy infrastructure, SEFI's main focus is to:

**Facilitate networks**
To facilitate and develop networks, SEFI:
- Brings financiers and developers together to share best practice on sustainable energy finance and promote investment in the sustainable energy sector;
- Builds credibility in the finance sector and within financial institutions for investment in sustainable energy; and
- Helps financiers create common platforms on sustainable energy finance, such as investment forums.

**Develop partnerships**
To create the partnerships with and within the finance sector to launch innovative financial products tailored to sustainable energy investments, SEFI:
- Develops and promotes joint finance sector/UN initiatives and other public-private partnerships;
- Links UN and donor funding with the finance sector to buy down and share risks; and
- Provides incentives for new financial product development that targets regions of the world currently without access to modern energy services.

**Provide information**
In any new economic sector, the need for current, relevant and timely information is critical. To provide this information, SEFI:
- Develops resources, risk management tools and activities that lower barriers to investment in this sector;
- Communicates investment activity in the sustainable energy sector to the broader finance community; and
- Promotes policy frameworks within financial institutions for investing in sustainable energy.

**Renewable energy technology status**

```plaintext
<table>
<thead>
<tr>
<th>Technology</th>
<th>Market Maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar Cells</td>
<td>Low</td>
</tr>
<tr>
<td>Bikeback</td>
<td>Medium</td>
</tr>
<tr>
<td>Geo-thermal</td>
<td>High</td>
</tr>
<tr>
<td>Offshore Wind</td>
<td>Low</td>
</tr>
<tr>
<td>Solar</td>
<td>Medium</td>
</tr>
<tr>
<td>Wind</td>
<td>High</td>
</tr>
</tbody>
</table>
```

**Declining costs for renewable energy**

![Declining costs chart](chart.png)

- Levelized cents/kWh in constant $2000
- 1980 to 2020