

## Germany Star

### ► Discussion of Vector Values

**Indicator 1:** With nearly 3.0 points in 1999 Germany is, considering the scale of the star, very far from the centre which represents the sustainability objective. However, there has been a downward trend since 1990 which is expected to continue as Germany strives to meet its targets under the Kyoto Protocol.

**Indicator 2:** The Guidelines for the Observers Reports permit the calculation of the vector by using either the average of two or more pollutants or using data for the pollutant that has the most significant impact on environment and health within a country. A multi-pollutant approach was applied for Germany. In order to assess the vector distance with the sustainability target one can either compare each single vector value or the average vector value on the scale of 0 to 1, with zero being the sustainability target. If we would have selected SO<sub>2</sub> emissions only, sustainability for this indicator would have been achieved. If we would have chosen NO<sub>x</sub> or CO emissions results are indicating Germany is acting un-sustainable. This example shows, that as a result of the subjectivity associated with defining which pollutants have the most environmental and health impacts, single pollutant indicators could be justified but also misleading. The average vector value (SO<sub>2</sub>, NO<sub>x</sub> and CO) which were considered for Germany amounts to 0.26 indicating that Germany needs to further reduce emissions of the most relevant pollutants in order to achieve the sustainability target.

**Indicator 3:** The sustainability target of providing full access of German households to the electricity grid has been achieved since the late 70s in, therefore the sustainability target has been achieved and maintained since then.

**Indicator 4:** The fraction of clean energy investment as a portion of total energy investment with a value of 92% (i.e. 0.92 in 1999), is still too low according to the standards established by HELIO International which aim for a value of 95% of all energy investments to be made into clean energy. However, comparing the values for 1999 and 1990 indicate that Germany has made some minimal improvements in terms of increasing clean energy investment over the last ten years.

**Indicator 5:** The results for determining energy security indicate an upward trend in terms of increase imports of fossil fuels to Germany over the past decade. Germany's dependence on energy imports are from diverse sources primarily within the EC (although also from Norway and CIS countries) and thus are in keeping with the Europeans integrated energy planning policies which encourage countries to trade within Europe to utilise the cleanest and most efficient energy sources. In other words, although the imports are fossil fuels it is possibly better for the environment and sustainable development for Germany to import these products than to rely on local coal. However, according to HELIO International criteria, the sustainability target established for this indicator is not reached by Germany.

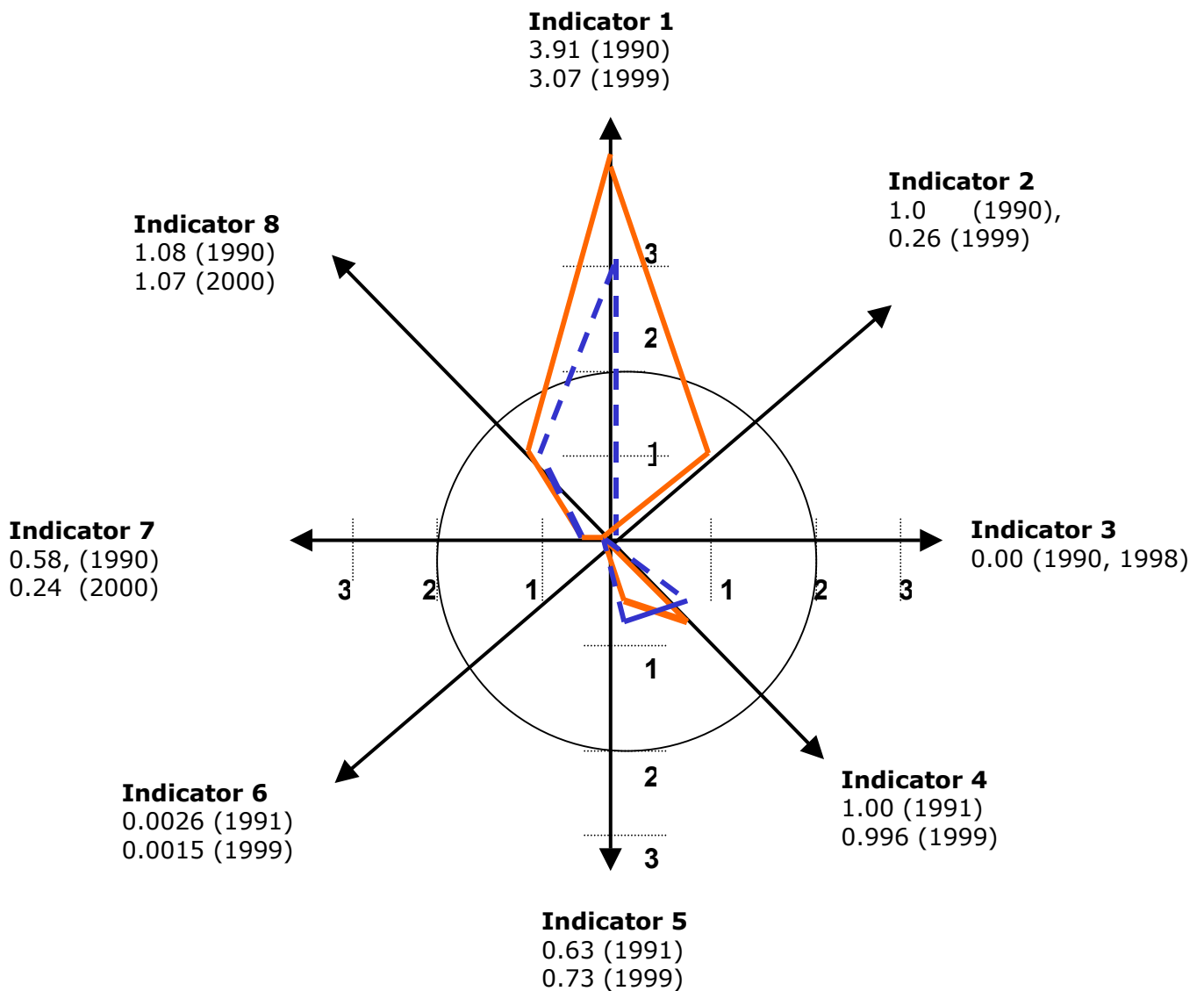
**Indicator 6:** The vector results for the burden on investments in both years 1990 and 1999 are close to zero, and thus are close to the sustainability target at the centre of the star.

**Indicator 7:** Germany has performed well achieving substantial decreases in wasteful energy consumption. However, Germany has to continue this trend if it will meet the HELIO International target of 1.06MJ/\$ GDP. It is recommended that Germany focus on improving energy efficiency where there are many opportunities for reducing wasteful energy consumption.

**Indicator 8:** In terms of renewable energy deployment, Germany has not achieved the sustainable target, since the vector values are higher than 1. However, the current government is keen to increase the share of renewables as a portion of total energy consumption in the country and it can be expected that in the future the results for Germany, as measured by this indicator will improve.

## ►Star Diagram

The Star graphically illustrates the vector results of all 8 indicators assessed for Germany. It must be noted that vector values for vector 2, 3, 6 and 7 are either zero, slightly above or under zero therefore their values fall into the centre of the star. Indicator 1, per capita energy sector carbon emissions, is the vector indicating the poorest performance according to HELIO International standards. However, decreases in emissions are expected in the next decades due to the emission reduction targets imposed by Germany under the Kyoto Protocol.



**Legend:**

- The orange line connects the vector values 1 to 8 for the base years (1990 or 1991) depending on data availability.
- The blue line connects the vector values 1 to 8 for the most recent situation. The years 1998, 1999 or 2000 were used depending on availability of data.