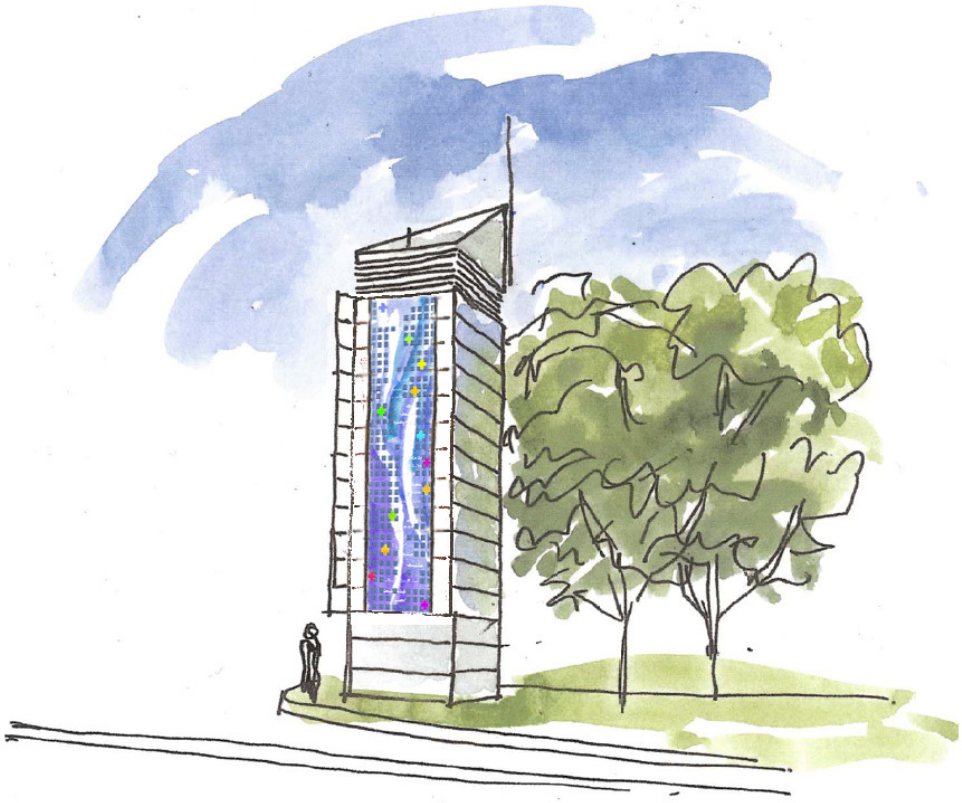


TRUE NORTH wind tower | LUX NOVA art glass

PRESS KIT

Sarah Hall

Regent College

PROFILE | Sarah Hall, RCA

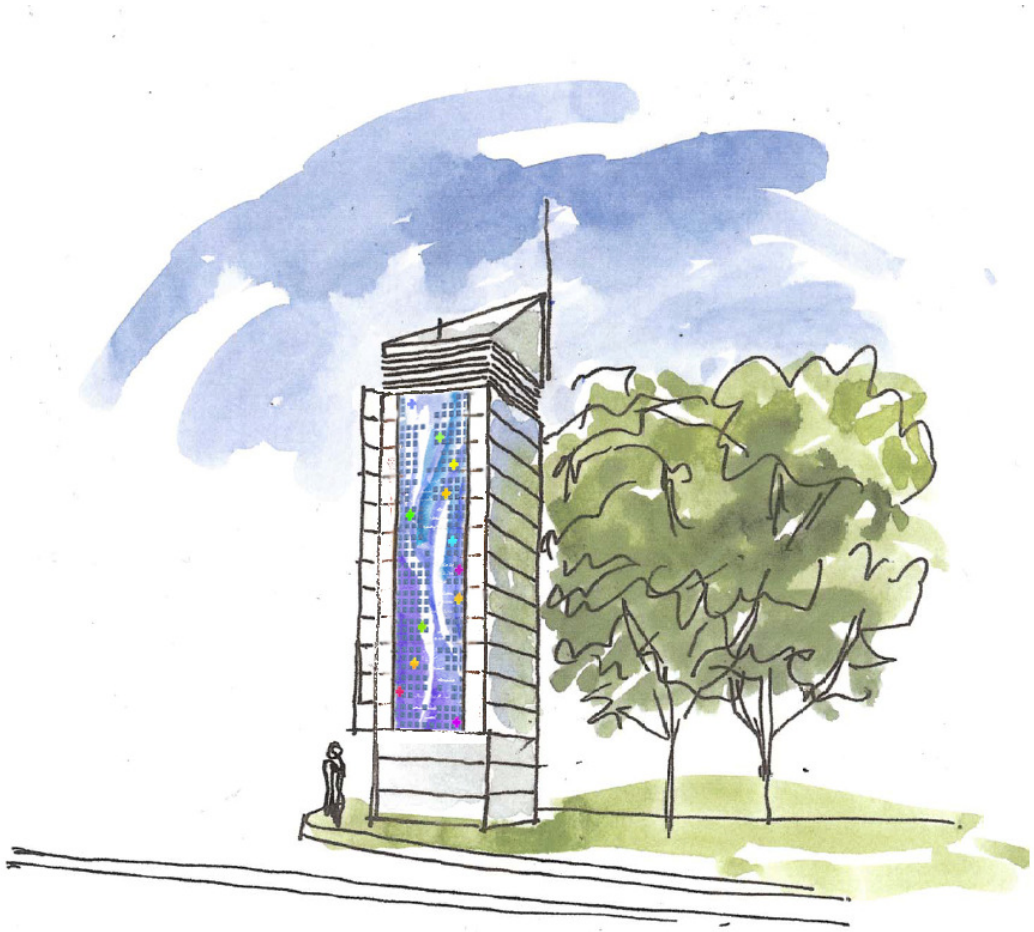
Sarah Hall is an internationally celebrated artist creating large-scale architectural glass installations. Her exceptional contribution to the built environment has garnered *Honor Awards* from the American Institute of Architects and the *Allied Arts Award* from the Ontario Association of Architects.

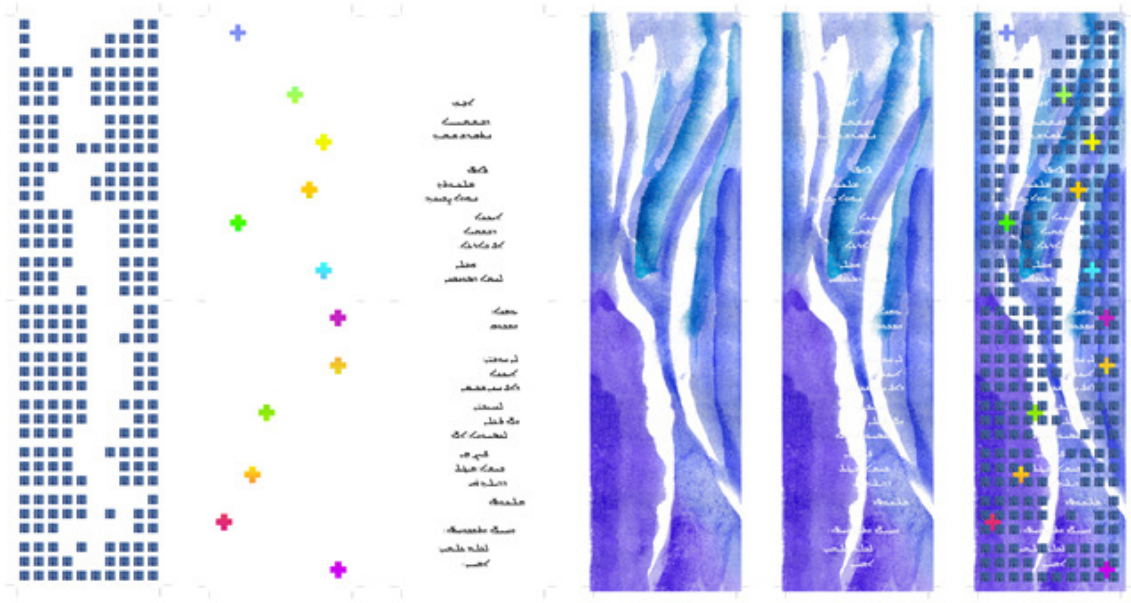
In 2002, Sarah's artistic achievements were acknowledged by her induction into the Royal Canadian Academy of Art. More recently, she received a national award in 2004 for *Leading Women: Arts & Culture* in recognition of her leadership in the visual arts.

Sarah attended the Architectural Glass Program at Swansea College of Art in Wales, UK, and earned her Diploma from the City & Guilds of London Institute. She apprenticed with Lawrence Lee, Glass Master at the Royal College of Art and followed this with a year living in Jerusalem studying gold-leaf and Islamic techniques in glass.

Sarah has established her studio in Toronto and keeps a busy international schedule with lectures, exhibitions and projects. In addition to her studio work, Sarah has organized many public stained glass tours for both the Gardiner and Royal Ontario Museum. With co-author Jeffrey Kraegel, Sarah has published over 35 articles on the history, art and technique of stained glass. Her book *The Color of Light* (LTP 1999) has become a classic reference for people or institutions that are planning to commission stained glass.

Sarah is well known for and pioneering new techniques. In 2004 Sarah was granted an Arts Fellowship from the Ontario Arts Councils' *Chalmers Foundation* to support her innovative work in photovoltaic glass art. For further information please visit: www.SarahHallStudio.com

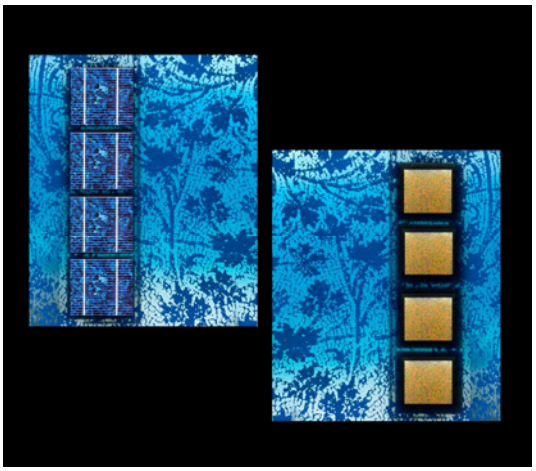




Images from Regent Wind Tower and Art Glass

Previous Photovoltaic Art Glass by Sarah Hall

Photovoltaic Art Glass



'Blue Vine' - photovoltaic art glass by Sarah Hall

"By forging an image with a source of energy we create a powerful story about how we can live in this world: it gives us a chance to dream about who we can be.'
Sarah Hall

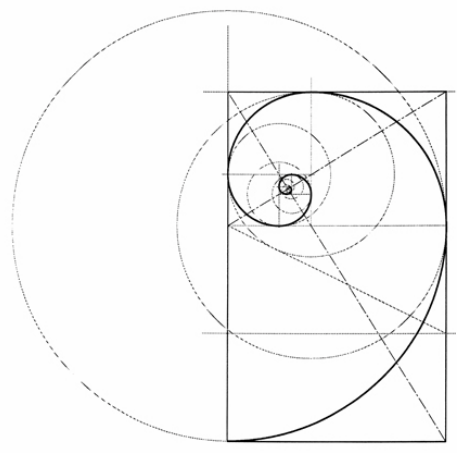
Photovoltaic art glass merges the ancient art of stained glass with the latest solar technology to produce a window that not only looks magnificent, but works for its living as well by gathering and storing electricity for later use.

Sarah Hall's new work, integrated into the wind tower is the **first installation** of photovoltaic art glass in North America. Commissioned by UBC's Regent College, the window combines beauty and function to present a powerful message about art, science, and social responsibility.

Embedded in the tower's window is an array of solar cells (thin silicon and metal squares that convert light into electricity), and these collect enough energy to illuminate the wind tower's beautifully coloured LED lighting system, also designed by the artist.

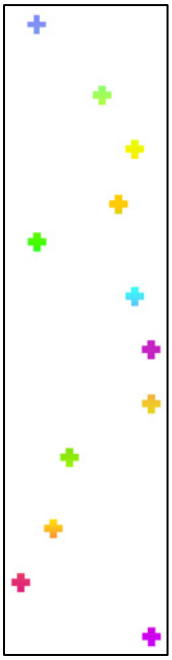
Although the window components (art glass, photovoltaic cells, tempered glass, and LED's) are well known, they are combined here using a patented method that produces a reliable and attractive source of energy. The solar cells are sandwiched between two panes of extra-clear tempered glass. In this way, the window provides insulation through double-glazing, while at the same time generating electrical energy that can be stored for later use. This energy can be applied to illuminate the interior at night or else directed into any number of designated illumination requirements.

Solar cells are a nearly perfect energy source, as they generate electricity without emitting harmful greenhouse gases. And because they are so durable they can transform nearly any surface into a clean, long-lasting energy source. Moreover, they come in a wide range of colors, allowing an unlimited range of designs. By bringing them into this engaging artwork Sarah Hall has given us a window into the future – one where sustainable living is a natural and integral part of everything we do.



Dichroic Glass

Dichroic Glass is created by plating very thin layers of metal oxides onto a layer of glass in a vacuum chamber. The combined thickness of all of these layers is less than five millionths of an inch, but together they transform the glass into a rich and varied visual celebration. They do this by creating a "dielectric interference filter" - a sort of selective colour mirror - that perfectly reflects or transmits specified colours.



Those colours that are reflected are perceived by the viewer on one side of the glass, while all of the rest of the light passes through the glass and presents another colour to the other side of the glass. All of the light energy that hits the filter must be accounted for in either the reflected or transmitted light, since none of the energy is absorbed.

This is in contrast to a typical piece of coloured glass, where the glass itself absorbs certain colours while allowing the rest to pass through. Instead the interference filter acts like a pair of rainbows: one in transmission; and one in reflection. In addition, the interference filter has the unique characteristic of shifting its colour as you change the angle of view.

One of the early uses of dichroic glass was for the windshields in spacecraft as it reflected harmful ultraviolet rays. Here it is used as a striking design element, forming the 12 coloured crosses in the window.

Backgrounder on Lord's Prayer in Aramaic

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ܕܒܫܡܝܐ
ܢܬܩܕܫ ܫܡܟ

ܬܐܬܐ
ܡܠܟܘܬܟ
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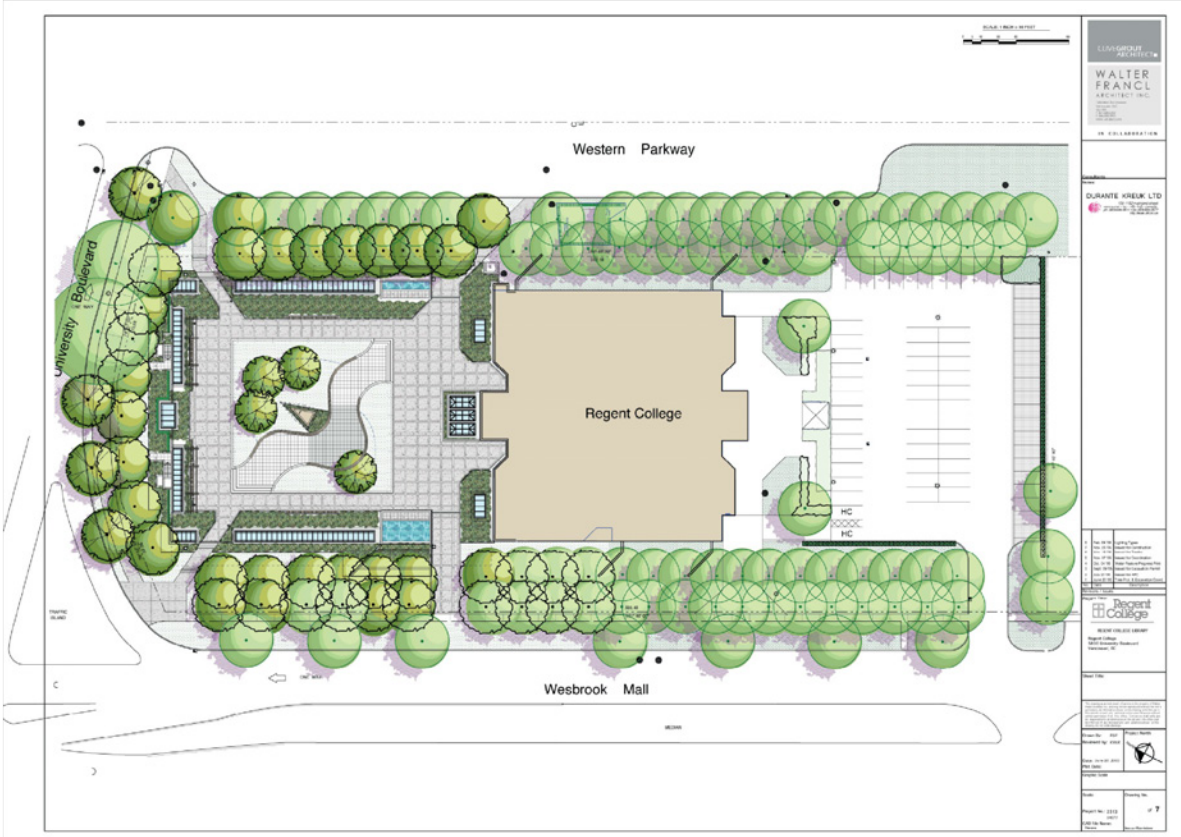
ܘܚܝܠܐ ܘܬܫܒܘܚܬܐ:
ܠܥܠܡ ܥܠܡܝܢ:
ܐܡܝܢ.

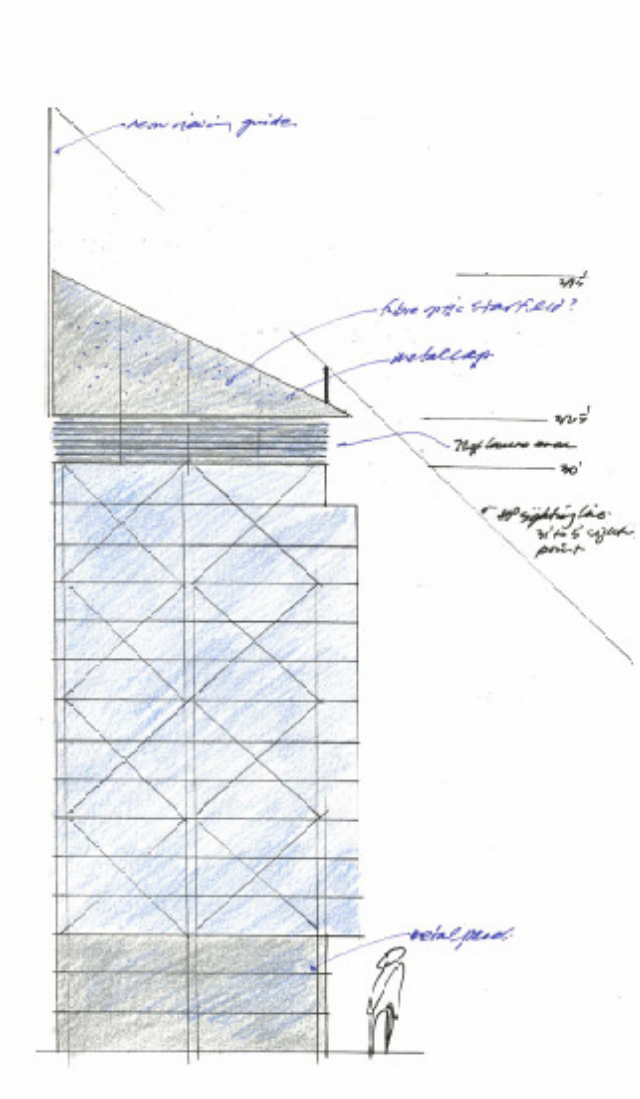
PROFILE | Clive Grout

Clive was the architect for the original Regent College building and is continuing the development of the original vision for the Regent community with the design of the new library and park. Clive has a commitment to introducing artwork into his projects as an integral component of the overall design. This has been most successfully demonstrated recently with his work as architect of the international terminal at Vancouver International Airport. The celebration and integration of Northwest Coast Aboriginal art within the airport is recognized world wide as a most sophisticated and distinctive integration of building and art. Clive is currently the President of the YVR Art Foundation. His wind tower for Regent College will feature North America's first photovoltaic art glass installation by internationally recognized glass artist Sarah Hall.



Regent College Wind Tower

The mechanical system of the Regent College Library is based on the concept of a radiant heating and cooling system installed within the concrete structure forming the ceiling of the library. Tempered fresh air is introduced at low velocities to the library through a series of floor diffusers with natural ventilation exhausting the air through a 30" high "wind tower" located on the roof in the centre of the library.



Natural ventilation will be achieved by making use of the natural pressure differences surrounding the building, caused by the wind and stack effect. Air movement within the building will depend on buoyance (thermal forces), stack and wind pressures.

The aerodynamically designed wind tower will provide natural ventilation, reduce fan power requirements and increase the energy efficiency of the mechanical systems. As the wind flows along the top of the wind tower, negative pressure is produced at the wind tower outlets which pull air through the building.

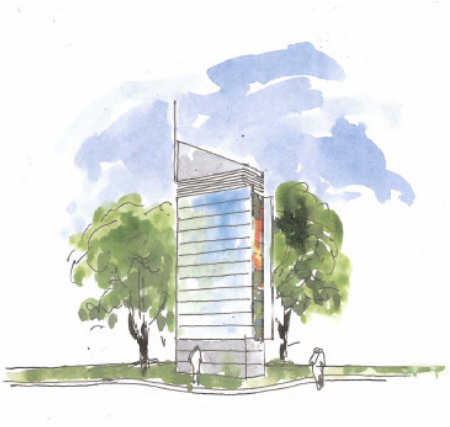
Wind towers have historically been used in indigenous structures in the Middle East and other temperate climates and are now being introduced within contemporary buildings as part of the commitment to more energy efficient and sustainable developments.

Clive Grout **MAIBC, FRAIC**

A founding Partner and Chairman of the Vancouver firm of Architectura, Clive formed his own practice in 2005 and continues to be an active design architect with 40 years experience in designing and managing a wide variety and scale of projects. He is internationally recognized for his ability to work collaboratively with clients and other professionals while leading teams on large-scale and complex multi-disciplinary projects.

EDUCATION
University of Toronto, Bachelor of Architecture, 1966
Cambridge University, Certificate in Theology, 1969

SELECTED PROFESSIONAL AFFILIATIONS AND WORK
Fellow, Royal Architectural Institute of Canada
Architectural Institute of British Columbia
Registered Architect, State of California
Airports Council International



Airports
- Chicago O'Hare International Airport, Retail Concession Planning
- Vancouver International Airport, International Terminal & Expansions
- Bermuda International Airport, Terminal Renovation
- Larnaca and Pafos Airports Concept Planning, Cyprus
- Vienna International Airport Wayfinding

Mixed Use/Retail
- Portside Convention Centre and Retail Pavilion, Vancouver, BC
- Opus Hotel Interiors, Vancouver BC
- Namesti Republiky Mixed Use Centre, Prague, Czech Republic
- Victoria Eaton Centre, Victoria, BC
- Festival Village Theme Park Retail, Taichung, Taiwan
- Robson Square Revitalization, Vancouver BC

Education/Cultural
- Regent College Vancouver
- Regent College Library, Vancouver
- Evergreen Cultural Center, Coquitlam BC
- Pacific Marine Training Center, Vancouver

Attractions
- NASA Kennedy Space Center, Launch Attraction
- NASA Space Center Houston Visitor Center, Houston
- Pacific Passages, Vancouver International Airport
- Blue Planet Aquarium Concept, Bremerhaven Germany
- Zoo am Meer Bremerhaven, Germany
- 2010 Olympics Sliding Center, Whistler
- Discovery World Theme Park Icon, Taichung, Taiwan
- BC Pavilion, Expo '86, Vancouver, BC
- General Motors, Canadian Pacific, Ramses II, Washington State Pavilions, Expo '86

Master Planning
- Hafen City Master Plan, Hamburg, Germany
- Swiss National Expo-02, Master Planning, Switzerland
- Barcelona Forum 2004, Spain
- Dubai Sports City Dubai UAE
- Elysium Resort Attraction Masterplan, Athens
- Shanghai Film Studios and Theme Park Masterplan, Shanghai China
- Space City Urban Entertainment Master Plan, Manchester, England
- Havana Film Studios and Attraction Masterplan, Cuba
- Whistler Ski Resort Master Plan, Whistler, BC
- Wawasan Mixed Use Master Plan, Kuala Lumpur

Excerpts from "World in Transition" Study
A Summary for Policy Makers
www.wbgu.de

"World in Transition: Towards Sustainable Energy Systems" was carried out by the German Advisory Council on Global Change in 2003. The Authors are a group of internationally known, high ranking scientists.

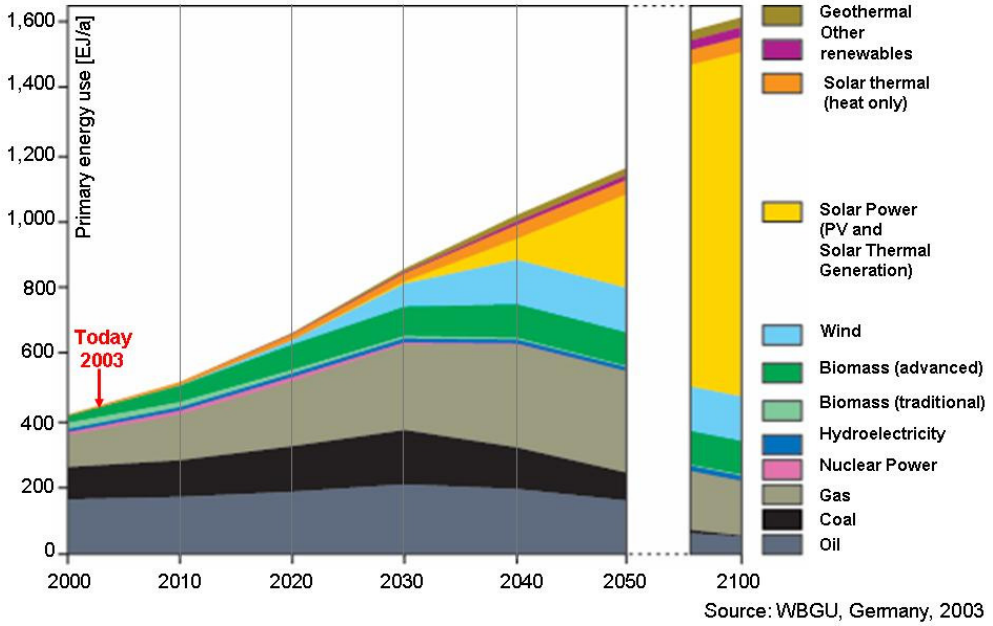
"The reports of the German Advisory Council on Global Change (WBGU) are an indispensable reference and resource on global environmental change policies. Every scientist, decision-maker and institution concerned with the pressing issue of environment and development should have them."

Prof. Dr. Klaus Töpfer
Executive Director of
the United Nations
Environment Programme

Conclusions of the Study:
It is essential to turn energy systems towards sustainability world-wide, in order to
1) protect the natural life support systems on which humanity depends, and
2) eradicate energy poverty in developing countries

Another benefit of this global reconfiguration of energy systems will be to promote peace by reducing dependency upon regionally concentrated oil reserves - and it is not only economically feasible but also cheaper!

Transformation of the glogal energy mix:
The exemplary path until 2050/2100



Source: WBGU, Germany, 2003