



Sustainability Novartis Campus Basel

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Novartis Campus Basel: History of the site



1895



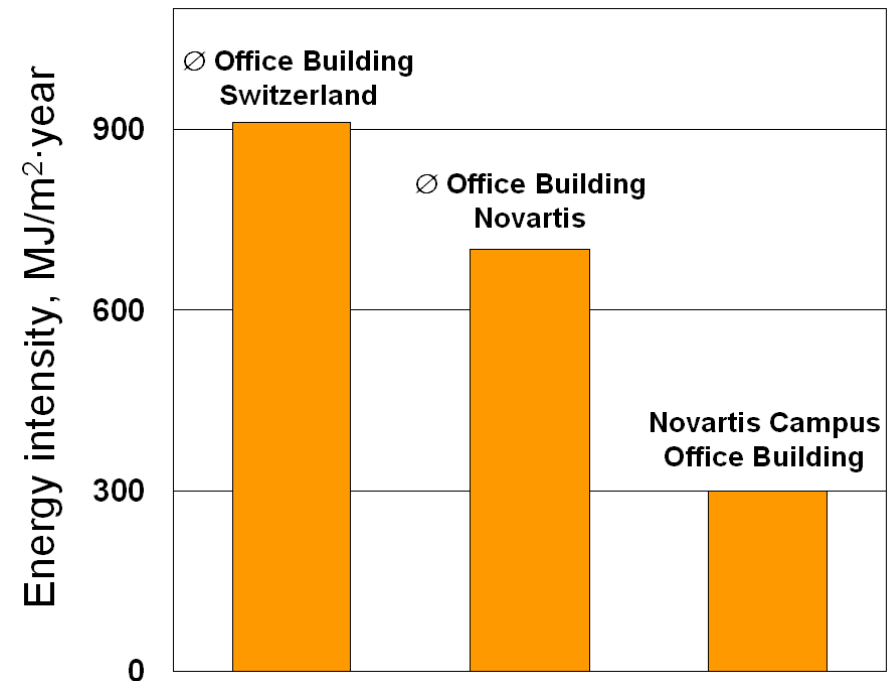
1980



2030

Campus energy efficiency

- The Novartis Campus Basel is compliant with the targets of the 2000 Watt Society: Energy Intensity is 1/3rd of average in Switzerland
- **We achieve this with ambitious Campus standards**
 - Building design and structure/envelope
 - High requirement on effective and suitable utilities and HVAC systems
 - Use of energy efficient equipment and appliances
 - Minimizing exergy (use of all possible opportunities given by the situation)
- **We have set building energy efficiency targets (in MJ/m²*a)**
 - Agreed with city Basel authorities
 - Communicated to planners
 - Mandatory multi-step energy challenge
 - Close and detailed monitoring



Energy efficiency target categories (MJ/m²*a) for various types of use

Category		Type of use	Energy Intensity (MJ/m ² .a)		
			Electricity	Heat	Total
1	Research Development	Analytics - Robots - Exhaust at sources	750	750	1500
2	Research Development	Biology w/wo animals - Hoods - Animal space ¹⁾ <20%	1000	1000	2000
3	Research Development	Biology with animals - Hoods - Animal space about 50%	1000	2000	3000
4	Research Development	Chemistry - A lot of hoods and equipment - High air change	1000	2000	3000
5	Administration	Office, library, etc. - with / without air conditioning - incl. auxiliary and supporting rooms	150	150	300
6	Bistro Cafeteria Auditorium	Special use - with / without air conditioning - incl. auxiliary and supporting rooms	300	150	450
7	Restaurant (with kitchen)	Special use - incl. auxiliary and supporting rooms	500	150	650
8	Empty space	Special use - Confined areas - Elevators, mounting tunnels, stair cases	0	15	15

Target agreement on energy efficiency with Basel city authorities

- Three “office” buildings in use at the end of 2007

	Gross floor area	Energy Intensity	
		Target	2007
• Forum 3	13721 m ²	450 MJ/m ² ·a	385 MJ/m ² ·a
• Fabrikstrasse 4	7840 m ²	311 MJ/m ² ·a	428 MJ/m ² ·a
• Visitor Center	16302 m ²	380 MJ/m ² ·a	302 MJ/m ² ·a
• Total	37863 m ²	391 MJ/m ² ·a	358 MJ/m ² ·a

→ **Target agreement with authorities: satisfied in 2007**

Life cycle costs for an office building

Building: gross floor space = 13'000 m ²		Average of Existing Office Buildings, Switzerland	Average of Existing Office Buildings, Novartis	Novartis Campus Office Building
Energy intensity	MJ/m ² a	910	700	300
Annual energy consumption	MWh/a	3300	2500	1100
Annual energy costs	CHF	330'000	250'000	110'000
Energy costs after 40 years	Mio. CHF	13.2	10.0	4.4

- Operating costs are actively influenced by the energy specifications
- The negative effect of increasing energy costs is reduced

Renewable energy: Campus target: CO₂-free energy supply

■ **Scope 1 (from on-site generated energy):**

- Heat from waste (IWB Ecomix)
- Solar and other renewable sources

■ **Scope 2 (from purchased energy):**

- Cooling with river water instead of mechanical cooling (free cooling)
- Green Electricity: IWB Ecomix
 - 95% conventional hydroelectric
 - 2.5% certified small-scale hydroelectric
 - 1.0% solar
 - 1.5% wind

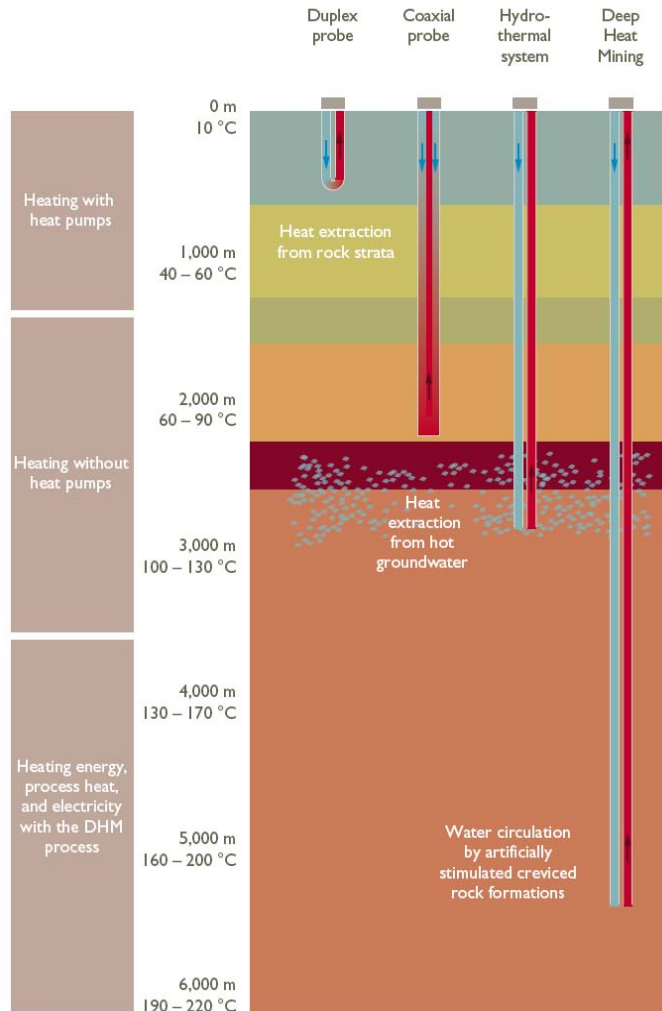
On-site generated renewable energies: photovoltaic



Photovoltaic on Gehry building:

- Produces the electricity for the lighting of the building
- For the very transparent building, the photovoltaic panels act additionally as a protection against the sun
- Specifications:
 - area 1'300 m²
 - 80 kW
- Expected electricity:
 - approx. 55-70 MWh/year
 - approx. 10-15% for the building

On-site generated renewable energies: geothermal



Feasibility study for geothermal energy:

- Energy for heating and cooling at the planned two high rises on the Campus
- Right geothermal application is investigated considering usage of the buildings
- 450 meter deep for a 120 meter high building
- Energy supply needs for an office block reduced to 1/4

Campus remediation and soil clean-up

- St. Johann is a brown-field site
- It was an formerly hosting a series of chemical operation sites and the city gas works
- Site clean-up (soil / groundwater) is underway as part of Novartis Campus project
- For the new underground parking, more than 275,000 m³ of soil was excavated, split into a number of categories and treated / disposed off properly
- Up to now, 40% of the soil has been entirely or partly remediated



Campus deconstruction of old buildings

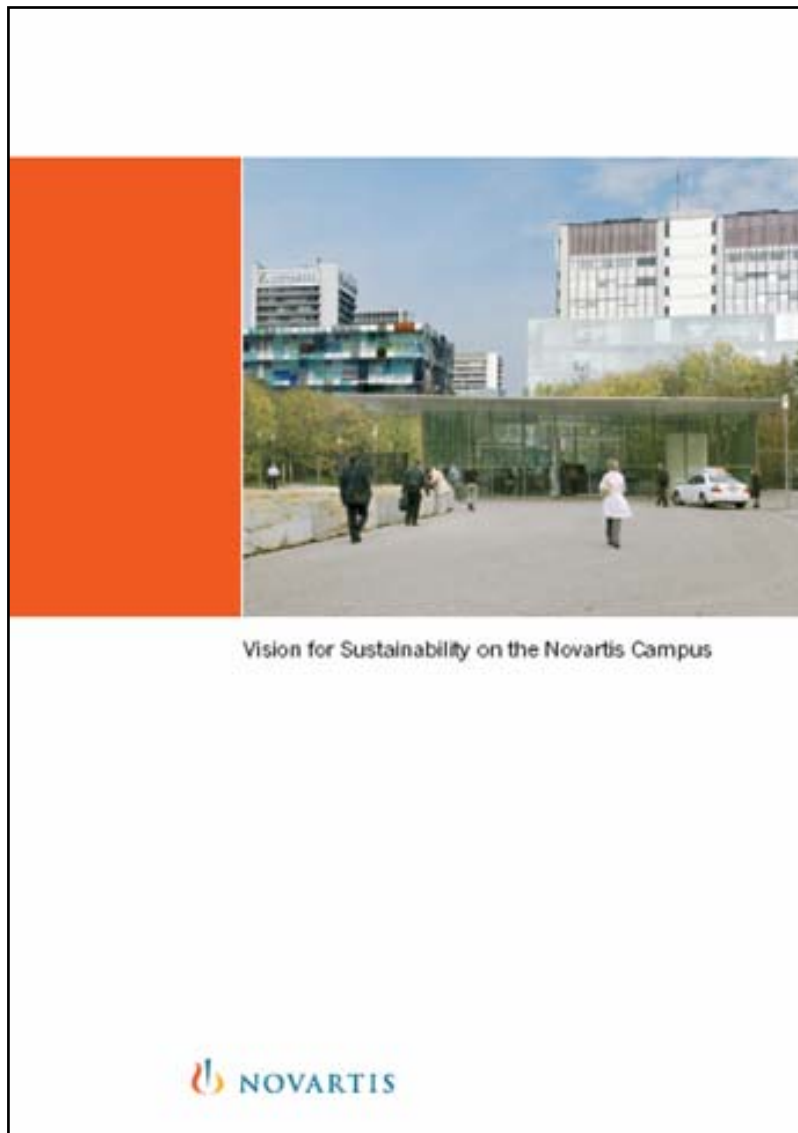
- Only obsolete buildings are being demolished
- Buildings are deconstructed – not demolished – in an environmentally conscious way
- Materials are separated and then are being recycled or reused
 - 80% of concrete is being recycled



Outlook and summary

	2007	2012
■ Campus Buildings:	3	15
■ Gross floor space:	37,863 m ²	~ 200,000 m ²
■ Use of renewable energies:	20,500 GJ	~ 140,000 GJ
■ Renewable / site energies:	2.8 %	~ 20 %

Thank you very much for your attention!



More about the Novartis
Basel Campus and
sustainability:

*Vision for Sustainability on
the Novartis Campus*

www.novartis.ch