



# Sustainability Novartis Campus Basel

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# Novartis Campus Basel: History of the site



1895



1980



2030

# The Campus is growing

Campus core to be finished in 2010

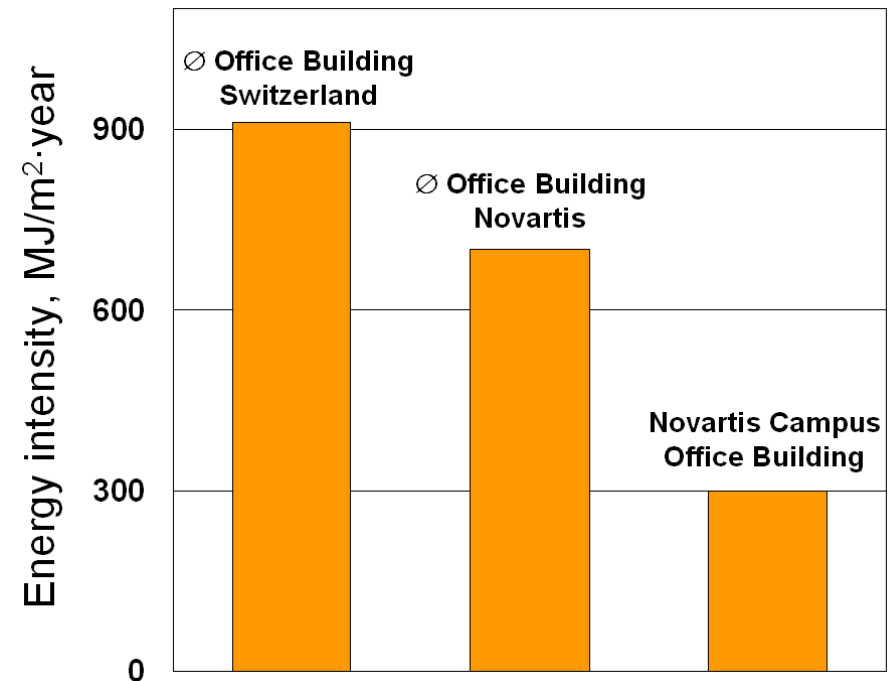
- Newly opened:  
**Buildings 1 to 7**
- 2009/10 openings:  
**Buildings 8 to 13**
- Planned until 2013:  
**Buildings 14 to 16**

Entire Campus project set for completion in 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/m<sup>2</sup>\*a)**
  - Agreed with city Basel authorities
  - Communicated to planners
  - Mandatory multi-step energy challenge
  - Close and detailed monitoring



# Energy efficiency target categories (MJ/m<sup>2</sup>\*a) for various types of use

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

# 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 <sup>2</sup>	450 MJ/m <sup>2</sup> ·a	385 MJ/m <sup>2</sup> ·a
• Fabrikstrasse 4	7840 m <sup>2</sup>	311 MJ/m <sup>2</sup> ·a	428 MJ/m <sup>2</sup> ·a
• Visitor Center	16302 m <sup>2</sup>	380 MJ/m <sup>2</sup> ·a	302 MJ/m <sup>2</sup> ·a
• Total	37863 m <sup>2</sup>	391 MJ/m <sup>2</sup> ·a	358 MJ/m <sup>2</sup> ·a

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

# Life cycle costs for an office building

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

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

# Renewable energy: Campus target: CO<sub>2</sub>-free energy supply

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## ■ **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



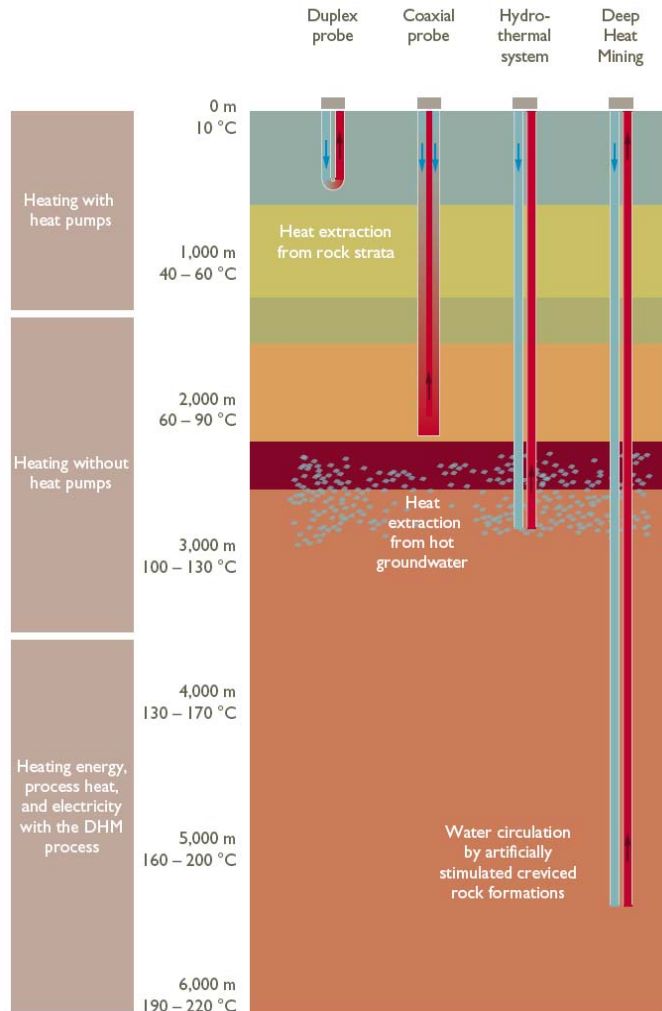
# On-site generated renewable energies: photovoltaic



## 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 m<sup>2</sup>
  - 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 m<sup>3</sup> 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

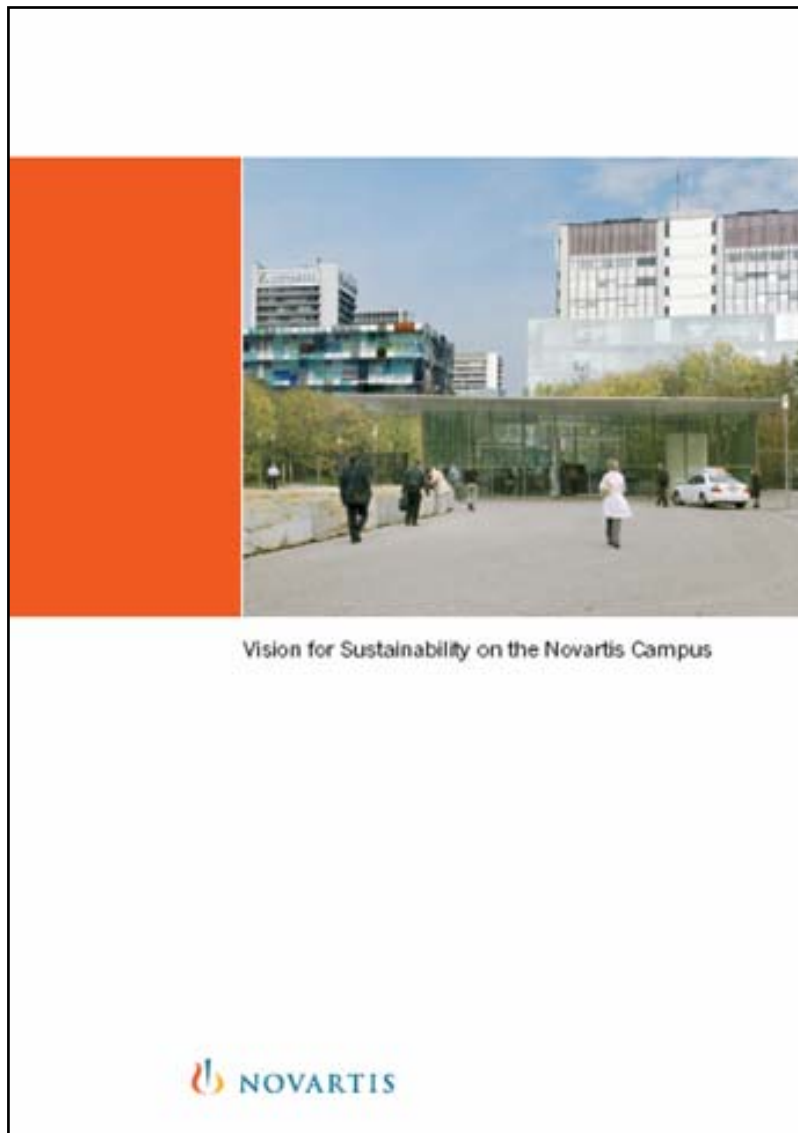


# Outlook and summary

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	<b>2007</b>	<b>2012</b>
■ Campus Buildings:	3	15
■ Gross floor space:	37,863 m <sup>2</sup>	~ 200,000 m <sup>2</sup>
■ 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](http://www.novartis.ch)