

# **From the 2000-Watt Society Vision to Visionary Architecture in Wood**

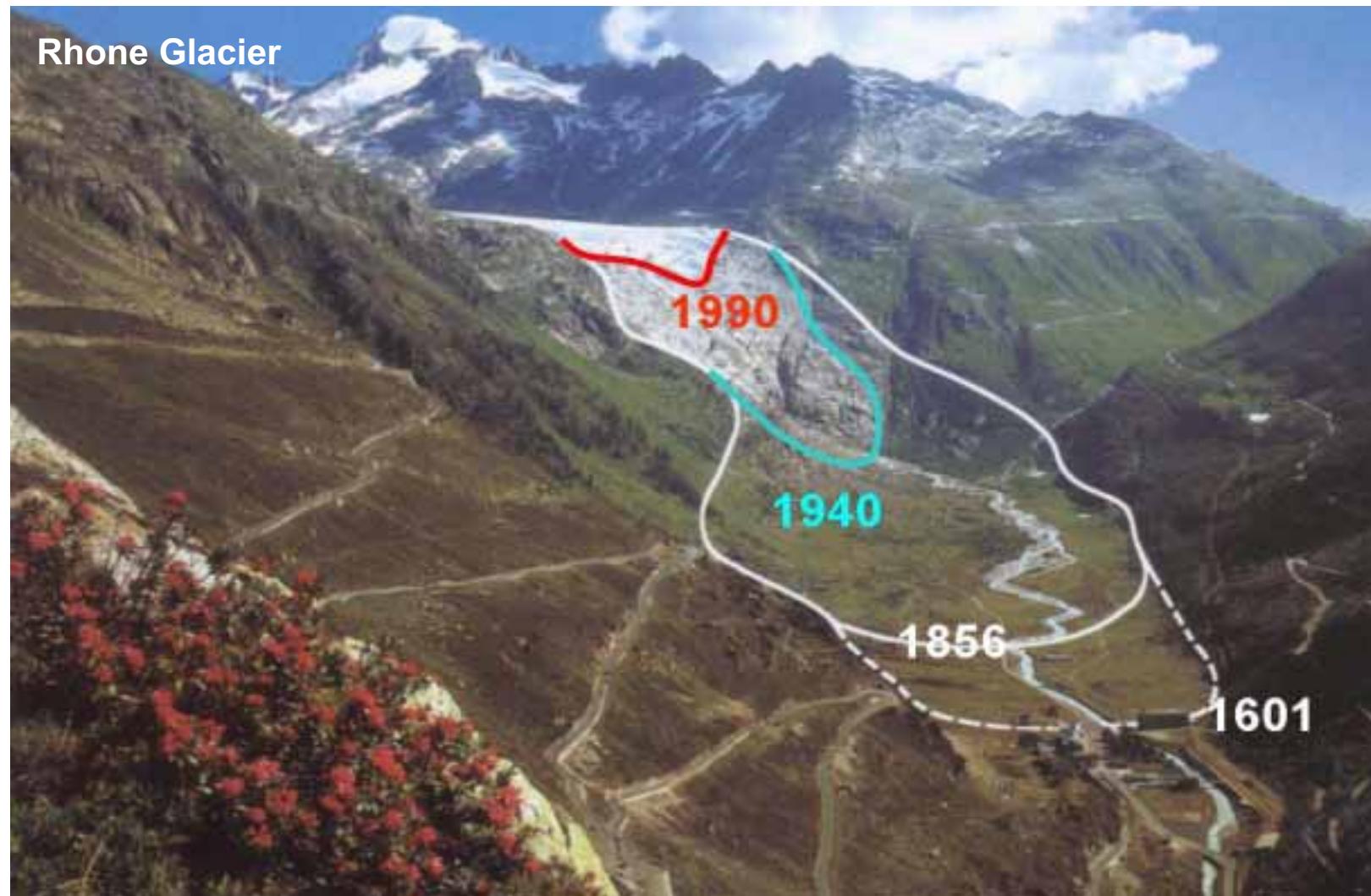
**The sustainability Discussion in Switzerland**

**By Christoph Affentranger  
Architect, Switzerland**

Based on material from Lignum ([www.lignum.ch](http://www.lignum.ch)), Novatlantis ([www.novatlantis.ch](http://www.novatlantis.ch)), Bob Gysin + Partner BGP ([www.bgp.ch](http://www.bgp.ch)), Schweizerische Interessengemeinschaft Industrieholz, Pro Holz Solothurn, Strausak Holzbaufirma AG and Architekturbüro Ch. Affentranger ([www.affentranger-architekt.ch](http://www.affentranger-architekt.ch))

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# The new climate – The Alps



# The new climate – The Valleys

August 2002, Dresden



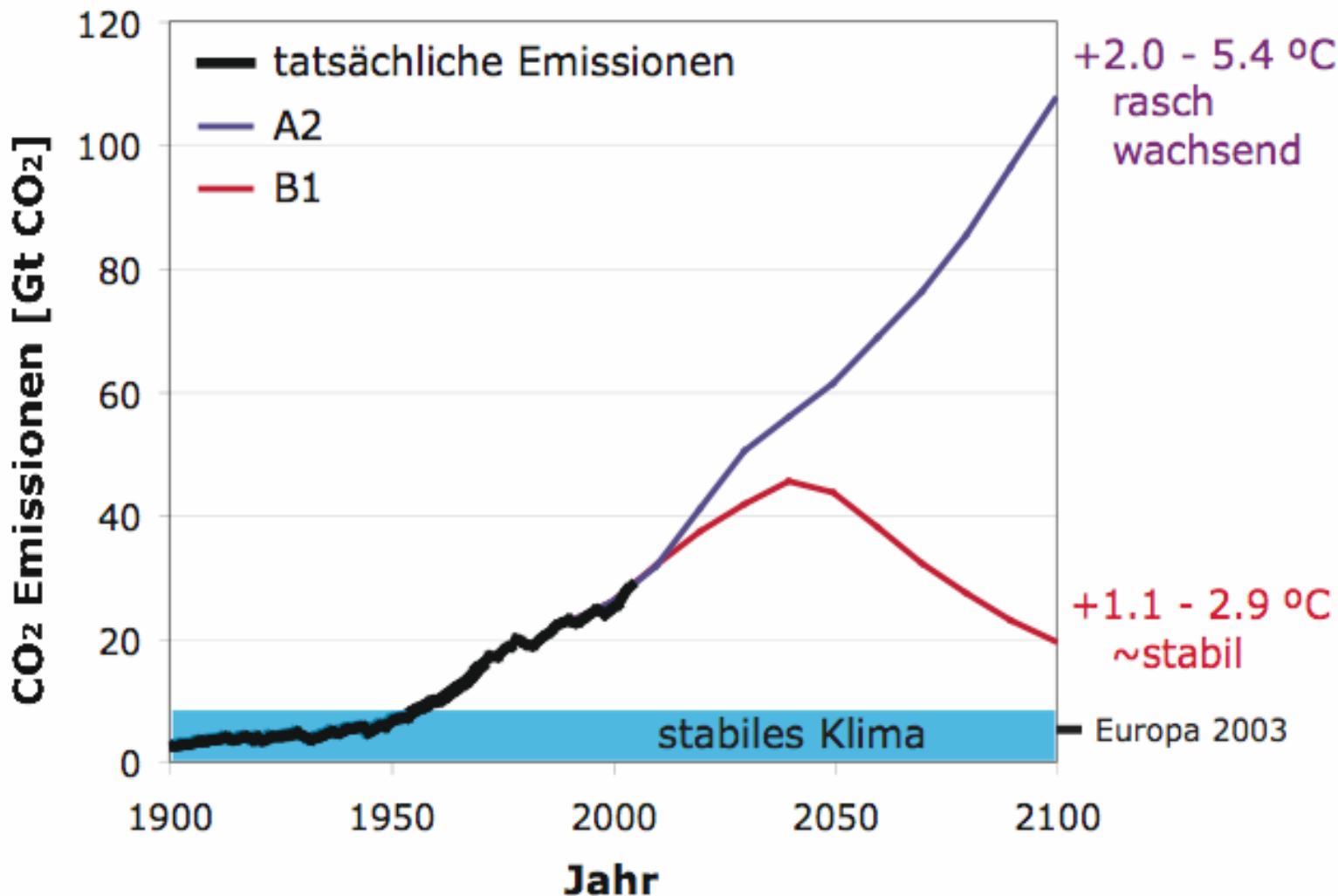
August 2005, Brienz



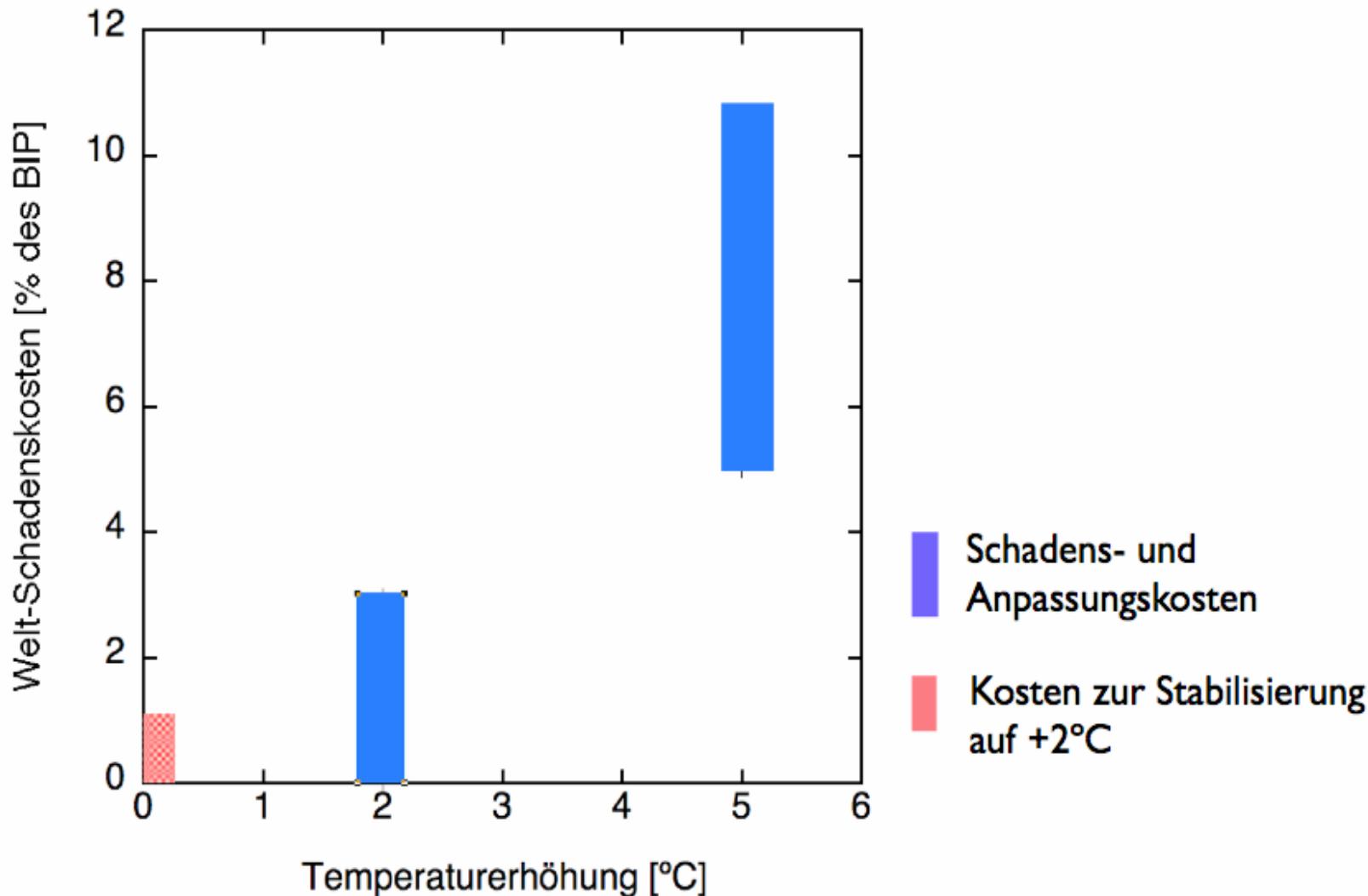
August 2007, Bern Matte district



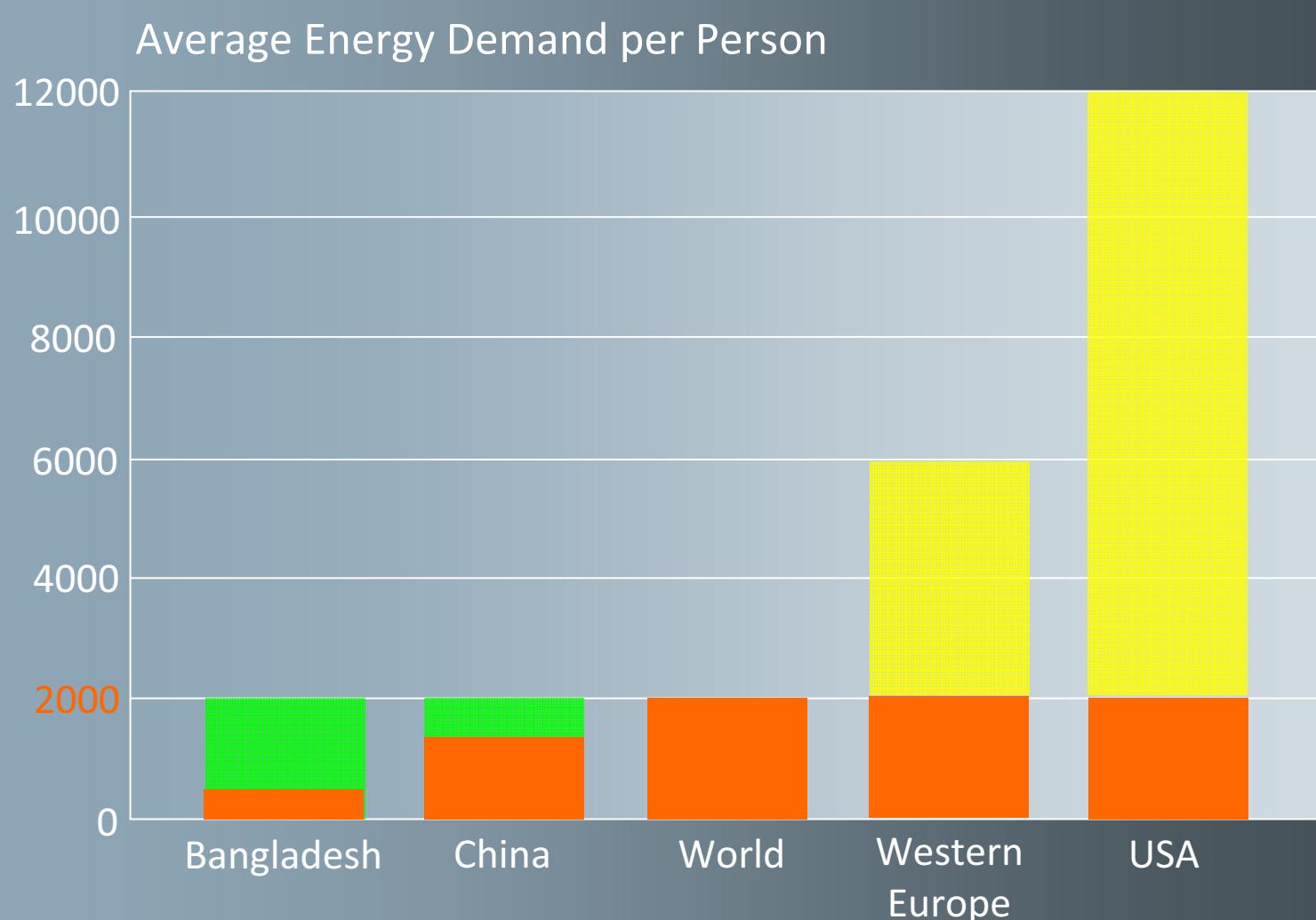
# The new climate - 70% CO<sub>2</sub>-Reduction



# The new climate – Prevent or Repair?



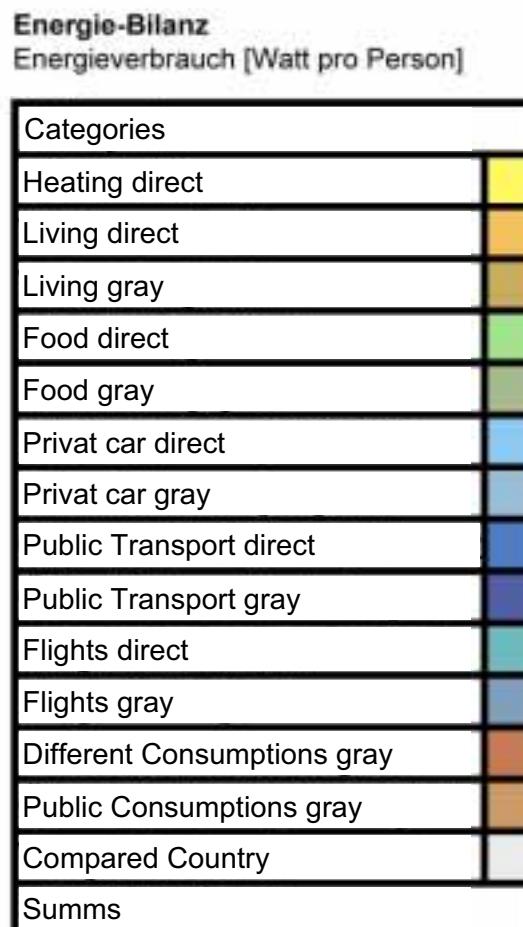
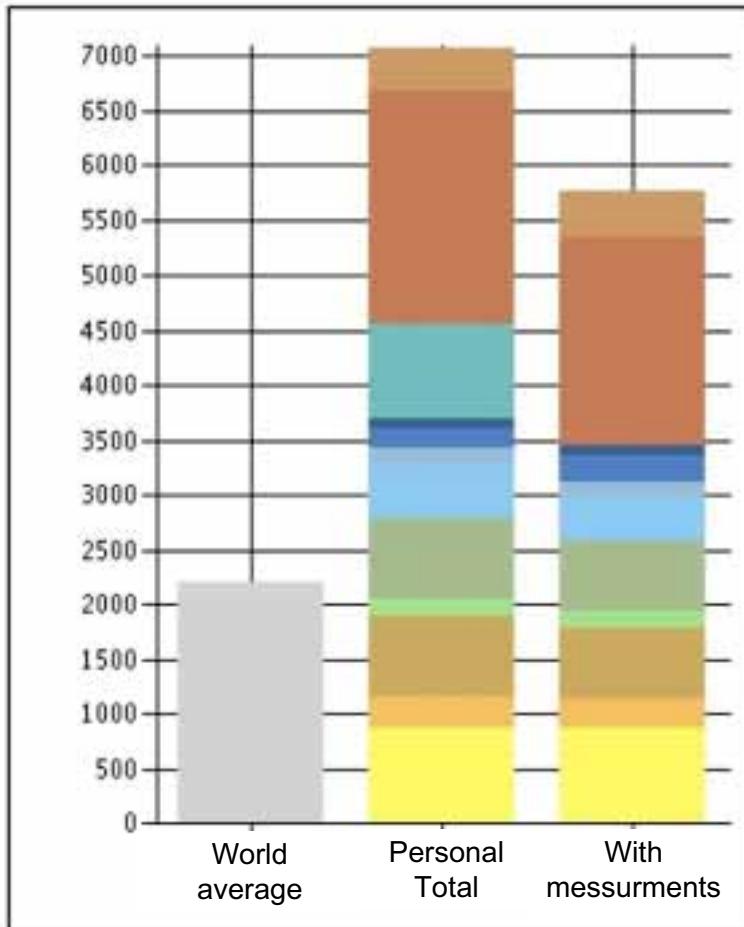
# Energy demand in Watt per Person



# Personal use Ch. Affentranger 2007

Ihr ECO<sub>2</sub>-Zertifikat, Freitag, 23. November 2007 13:44:41

Personal Eco-calculator  
can be found on  
[www.novatlantis.ch](http://www.novatlantis.ch)  
(in German only)



# 2000 Watt per Person means:

SUV

22 miles per gallon  
(Gasoline, Diesel)



Present Buildings

10 litres  
heating oil per m<sup>2</sup>



Fossil

Oil, Gas,  
Coal



1-Way

350 kg/a\*person  
(waste)



2005



2050

Light Cars

82 miles per gallon  
(Gas, H2)

2000-WattStandard

3 litres heating  
oil per m<sup>2</sup>

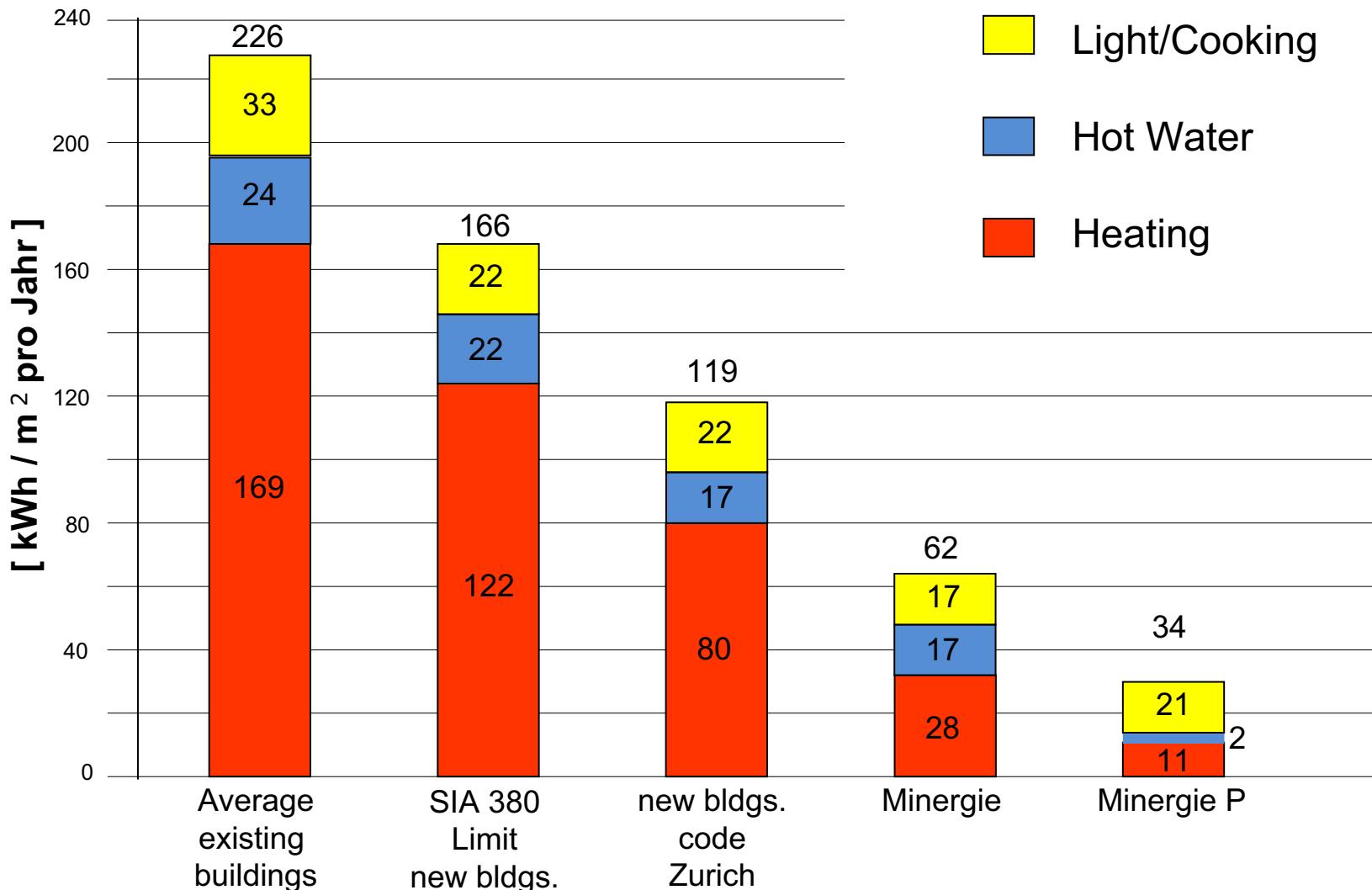
Renewables

sun fuels

Reuse Recycling

150 kg/a\*person  
(waste)

# Factor 7 for Buildings

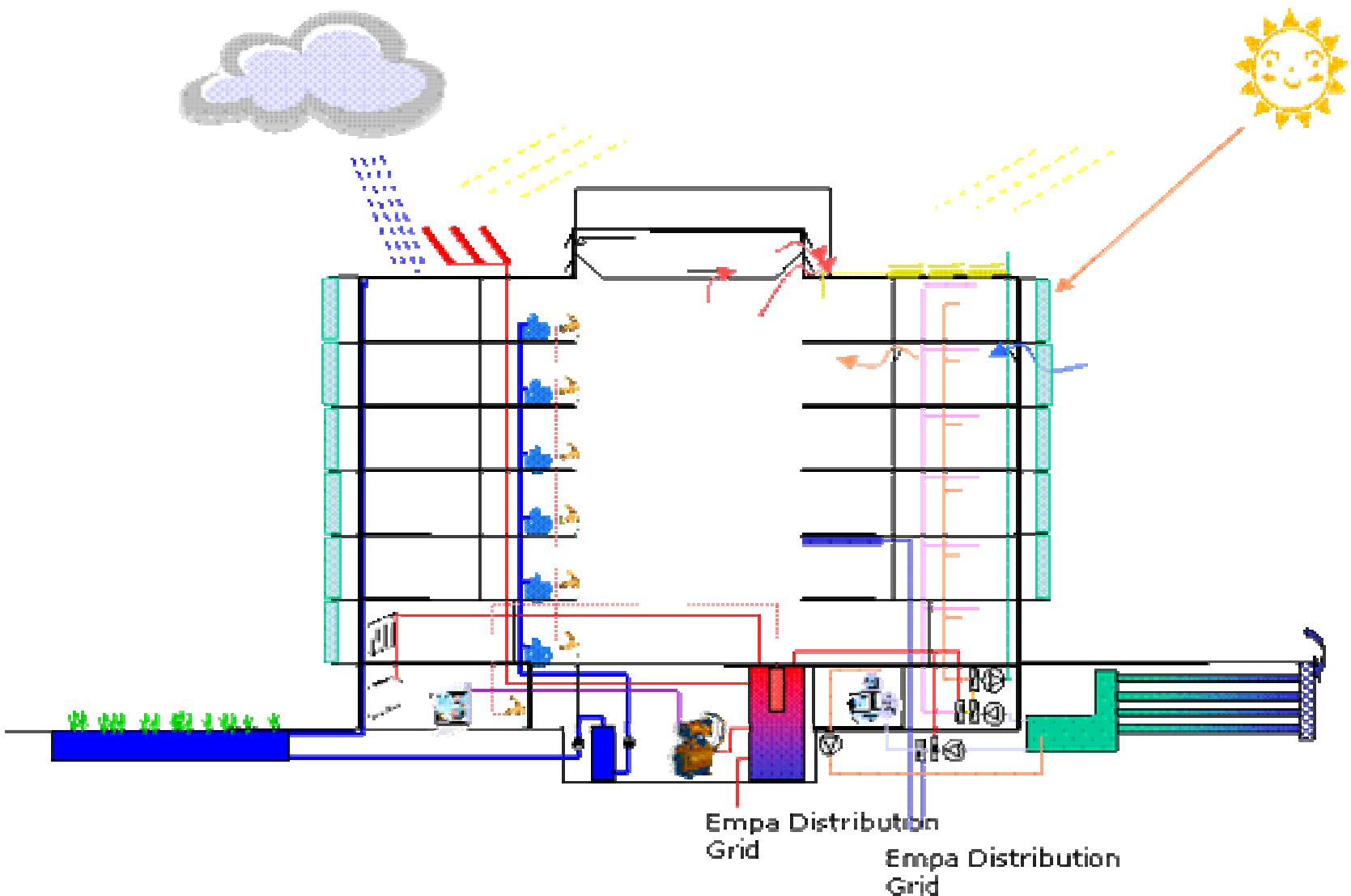


# The example: Forum Chriesbach

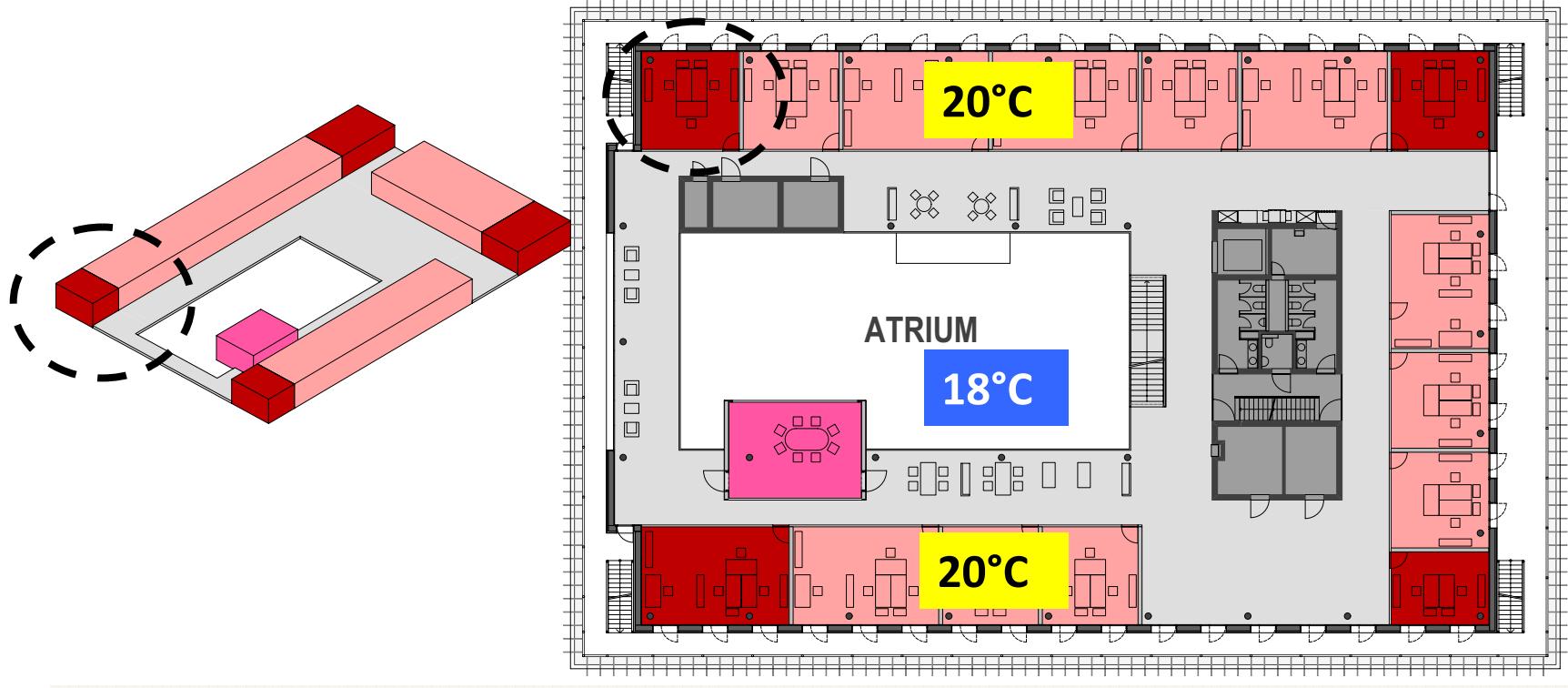


- EAWAG headquarter for research and encounter
- Bob Gysin & Partner
- Minergie P building
- Very low emissions
- Water-saving installations
- Low life cycle cost
- Good comfort
- Leadership image

# The example: Forum Chriesbach



# The example: Forum Chriesbach



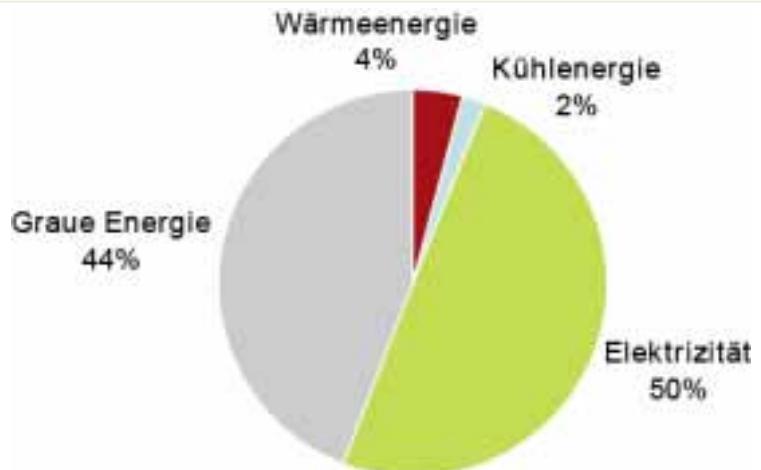
- **Zweiklimazonenmodell → Nur beheizen was notwendig**
- **ausgewogene thermische Bedingungen → kleine Leistung**
- **Geheizt wird mit internen Lasten → Luftheizung als Kompensation**

# The example: Forum Chriesbach



# The example: Forum Chriesbach

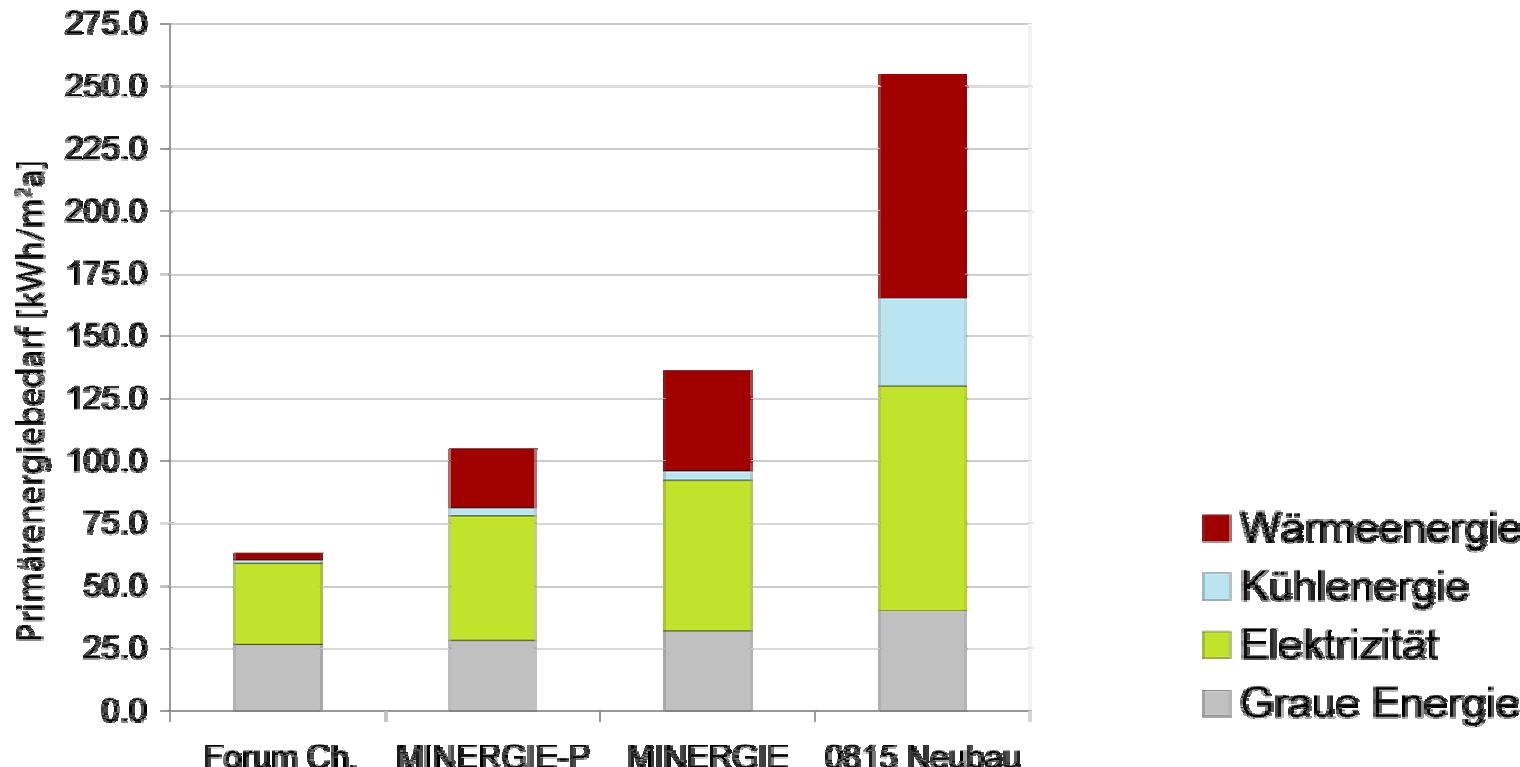
„1.4 liter building“



	Endenergie <sup>1</sup>	Gewichtung	Primärenergie <sup>1</sup>	Anteil
Wärmeenergie	2.1	1.3	2.7 kWh/m <sup>2</sup> a	4 %
Kühlenergie	1.1	1.1	1.2 kWh/m <sup>2</sup> a	2 %
Elektrizität	10.8	3.0	32.4 kWh/m <sup>2</sup> a	50 %
Graue Energie			28.6 kWh/m <sup>2</sup> a <sup>2</sup>	44 %
Total	14.0 kWh/m <sup>2</sup> a		64.9 kWh/m <sup>2</sup> a	100 %

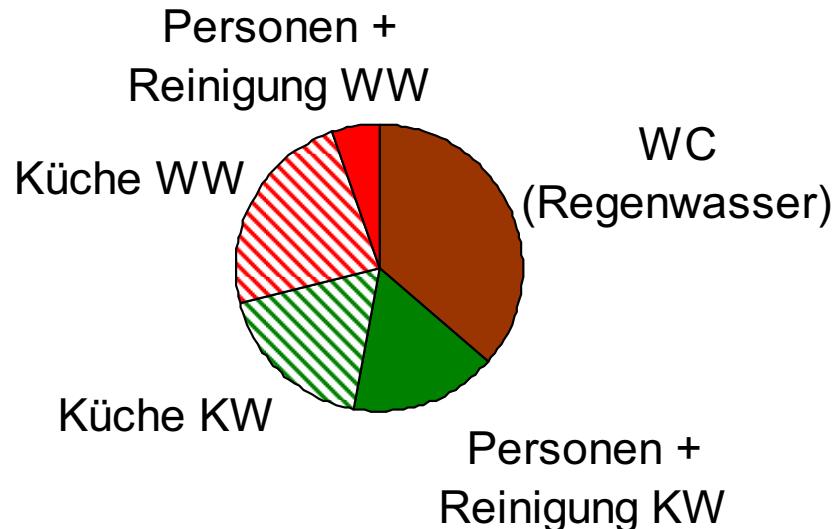
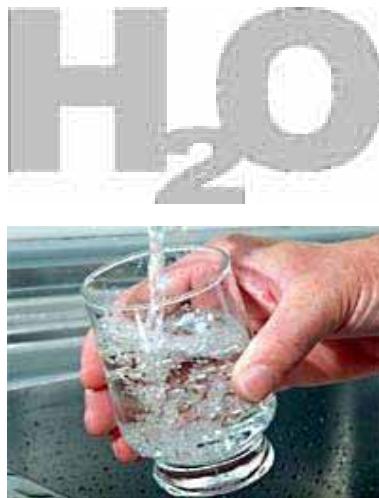
<sup>1</sup> bezogen auf die Energiebezugsfläche EBF (11170 m<sup>2</sup>)      <sup>2</sup> Entspricht 5224 MJ/m<sup>2</sup> EBFo (8270 m<sup>2</sup>) oder 139 MJ/m<sup>2</sup>a EBFo (8270 m<sup>2</sup>) bei durchschnittlich angenommener Lebensdauer von ca. 37.6 Jahren

# The example: Forum Chriesbach



Der **Gesamtenergiebedarf** des „Forum Chriesbach“, ist gegenüber einem konventionellen Neubau, mehr als ein **Faktor 4 tiefer**.

# The example: Forum Chriesbach



## Trinkwasser pro Jahr

Küche	42%	535	$m^3$
Rest	22%	275	$m^3$
<b>ab Netz</b>	<b>63%</b>	<b>810</b>	<b><math>m^3</math></b>

## Regenwasser pro Jahr

Bedarf	37%	467	$m^3$
Ertrag	-37%	-467	$m^3$
<b>ab Netz</b>	<b>0%</b>	<b>0</b>	<b><math>m^3</math></b>

# Forest for our Future



# Wood for our Future



# Wood for our Future



# Wood for our Future



# Wood for our Future

Pit Lane Park BMW Sauber F1 Team, Barcelona (2006)

Company: Strausak Holzbau AG, Biberist



# Wood for our Future

Pit Lane Park BMW Sauber F1 Team, Barcelona (2006)

Company: Strausak Holzbau AG, Biberist

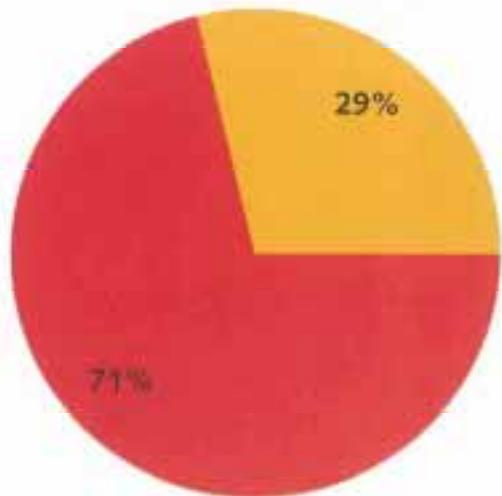


# European Forests in Figures

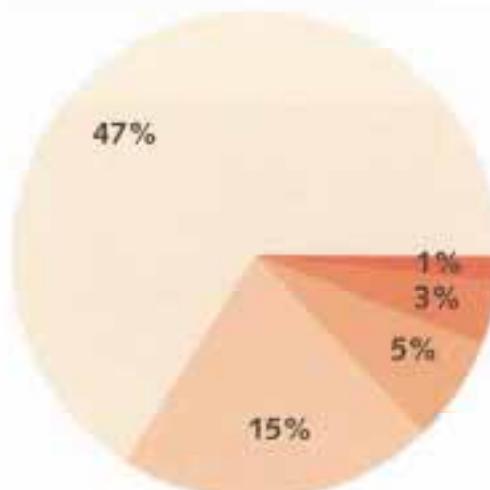
Country	Total Wood in Mio. m <sup>3</sup>	Total Wood in m <sup>3</sup> /ha
Sweden	2945	105
Germany	2911	271
France	1959	116
Finland	1954	86
Italy	1071	109
Austria	1030	266
Norway	742	62
Spain	592	23
<b>Switzerland</b>	<b>428</b>	<b>361</b>
Netherlands	51	182

# Swiss Forests in Figures

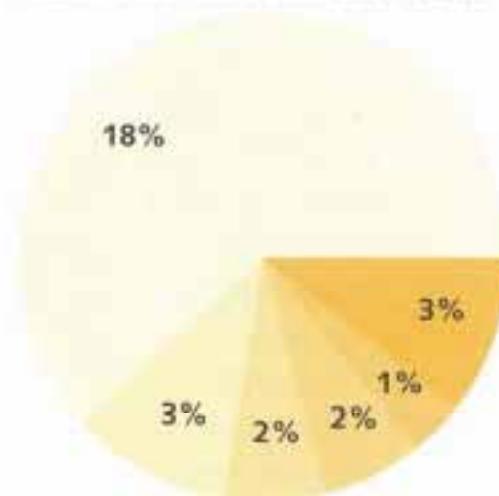
Bäume im Schweizer Wald



Nadelhölzer im Schweizer Wald



Laubhölzer im Schweizer Wald



- 71 % Nadelhölzer mit
- 47 % Fichte
- 15 % Tanne
- 5 % Lärche
- 3 % Föhre
- 1 % andere

- 29 % Laubhölzer mit
- 18 % Buche
- 3 % Esche
- 2 % Ahorn
- 2 % Eiche
- 1 % Kastanie
- 3 % andere

# Swiss Low Energy Buildings in Wood

Minergie House, Chailly/Montreux (1999)

Architects: Gilles Bellmann



# Swiss Low Energy Buildings in Wood

Minergie Multy Storey Appartement House „Sunny Woods“, Zürich (2000)

Architects: Beat Kämpfen, Zürich



# Swiss Low Energy Buildings in Wood

Minergie Housing Hegianwandweg, Zürich (2003)

Architects: EM2N Architekten, Zürich



# Swiss Low Energy Buildings in Wood

Minergie Multy Storey Appartement House, Steinhausen (2006)

Architects: Scheitlin\_Syfrig + Partner, Luzern



# Swiss Low Energy Buildings in Wood

Minergie-P-Eco Multy Storey Appartement House, Bern (2006)

Architects: Halle 58, Bern



# Swiss Low Energy Buildings in Wood

Nullenergie-Bürobau für Marché Mövenpick, Kemptthal (2007)

Architects: Beat Kämpfen, Zürich



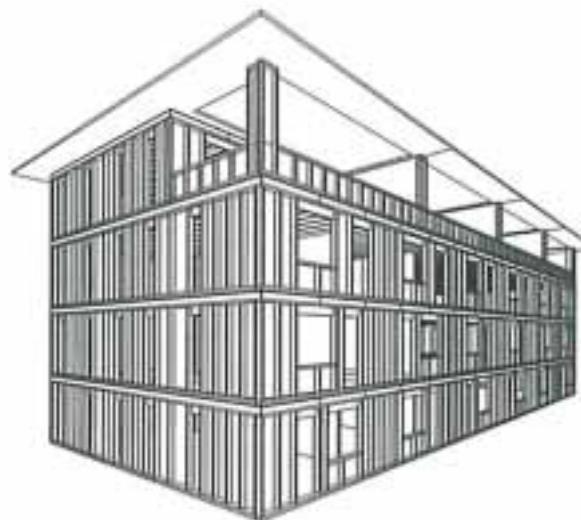
# Swiss Low Energy Buildings in Wood

Minergie-P-Eco "Green Offices", Freiburg-Givisiez (2007)

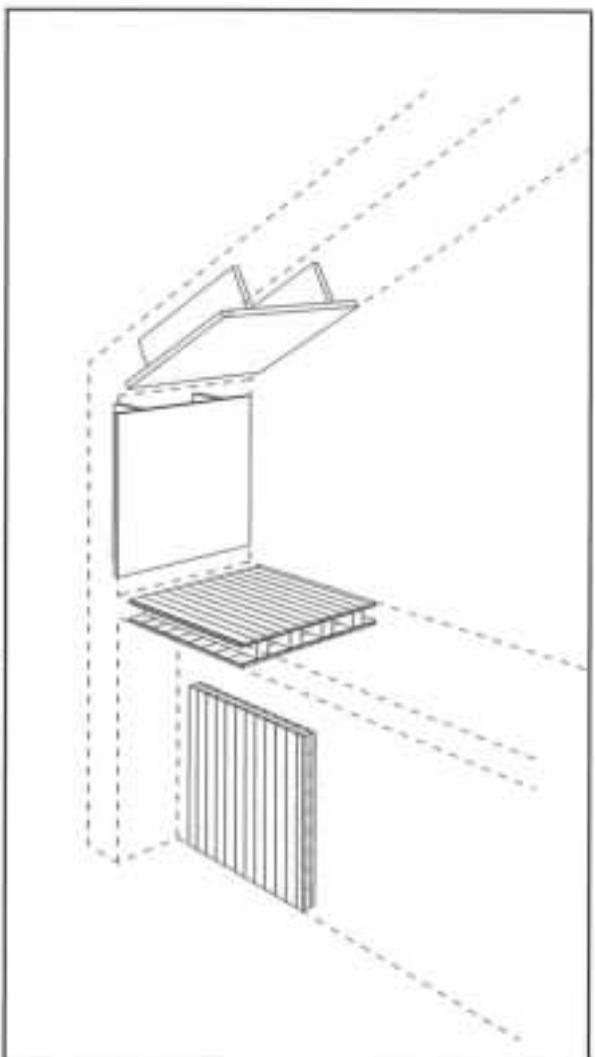
Architects: Conrad Lutz, Freib



# Building Techniques for Wood



# House Tgea Sulegl, Mathon



# House Tgea Sulegl, Mathon



# House Tgea Sulegl, Mathon



# House Tgea Sulegl, Mathon



# House Tgea Sulegl, Mathon



# House Tgea Sulegl, Mathon



# House Tgea Sulegl, Mathon

Passiv Single Family House, Mathon (2007/2008)

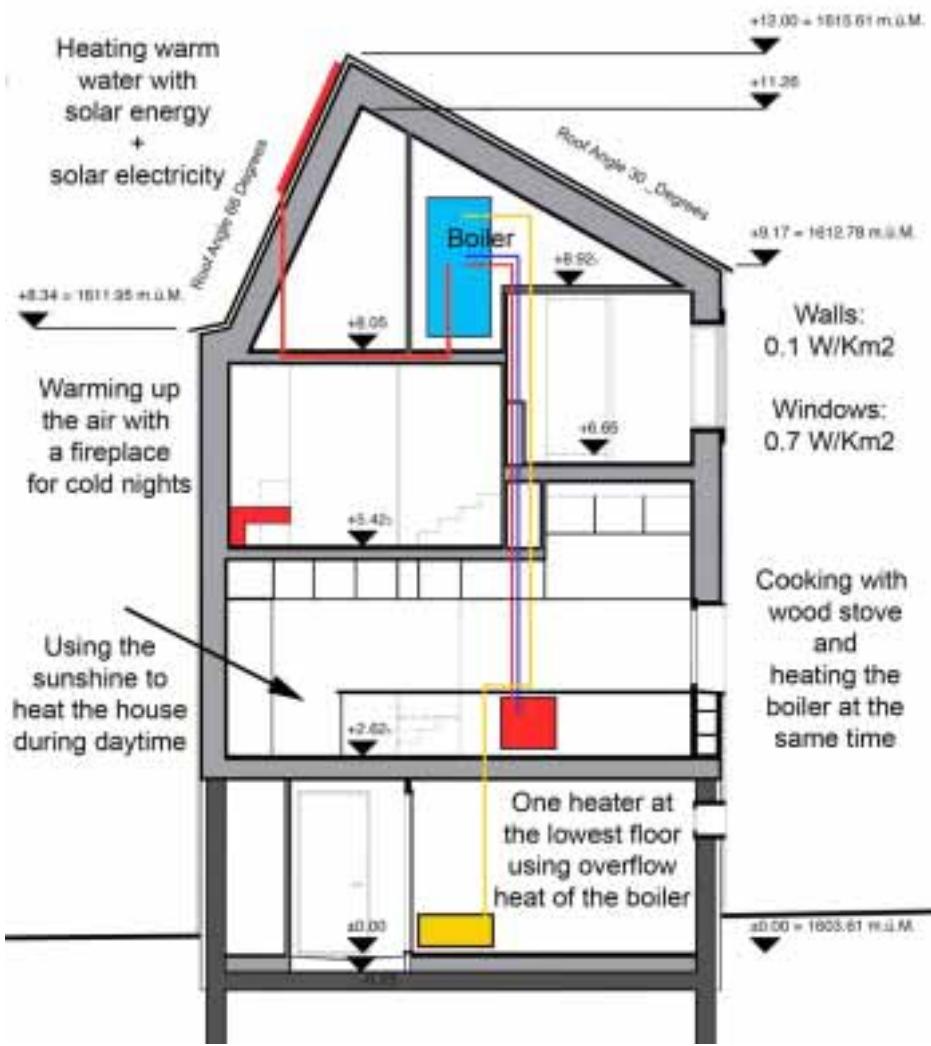
Architects: Ch. Affentranger, Zug



# House Tgea Sulegl, Mathon



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**Thank you very much for your attention**

**Wood**  
just  
tastes  
good

