Passive House Institute

Bureau of Energy Efficiency

सत्यमेव जयते
Government of India
Ministry of Power

german cooperation
DEUTSCHE ZUSAMMENARBEIT

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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THIS PRESENTATION WAS SHARED BY

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FOR THE SESSION:

"Policy Framework for Energy Efficiency in Buildings (Rating and Labelling System)"

DURING ANGAN 2019

Knowledge Partner

teri The Energy and Resources Institute
Creating Innovative Solutions for a Sustainable Future

Event Partner

TEC INDIA
Event & Brand Management Co.

LAIF project: First Passive House prototypes, Morelia, Mexico

Stepwise approach
towards higher efficiency

ANGAN Conference | Delhi, 10/09/2019

Policy Framework for Energy Efficiency in Buildings (Rating and Labelling System)

Camille Sifferlen
Project Manager
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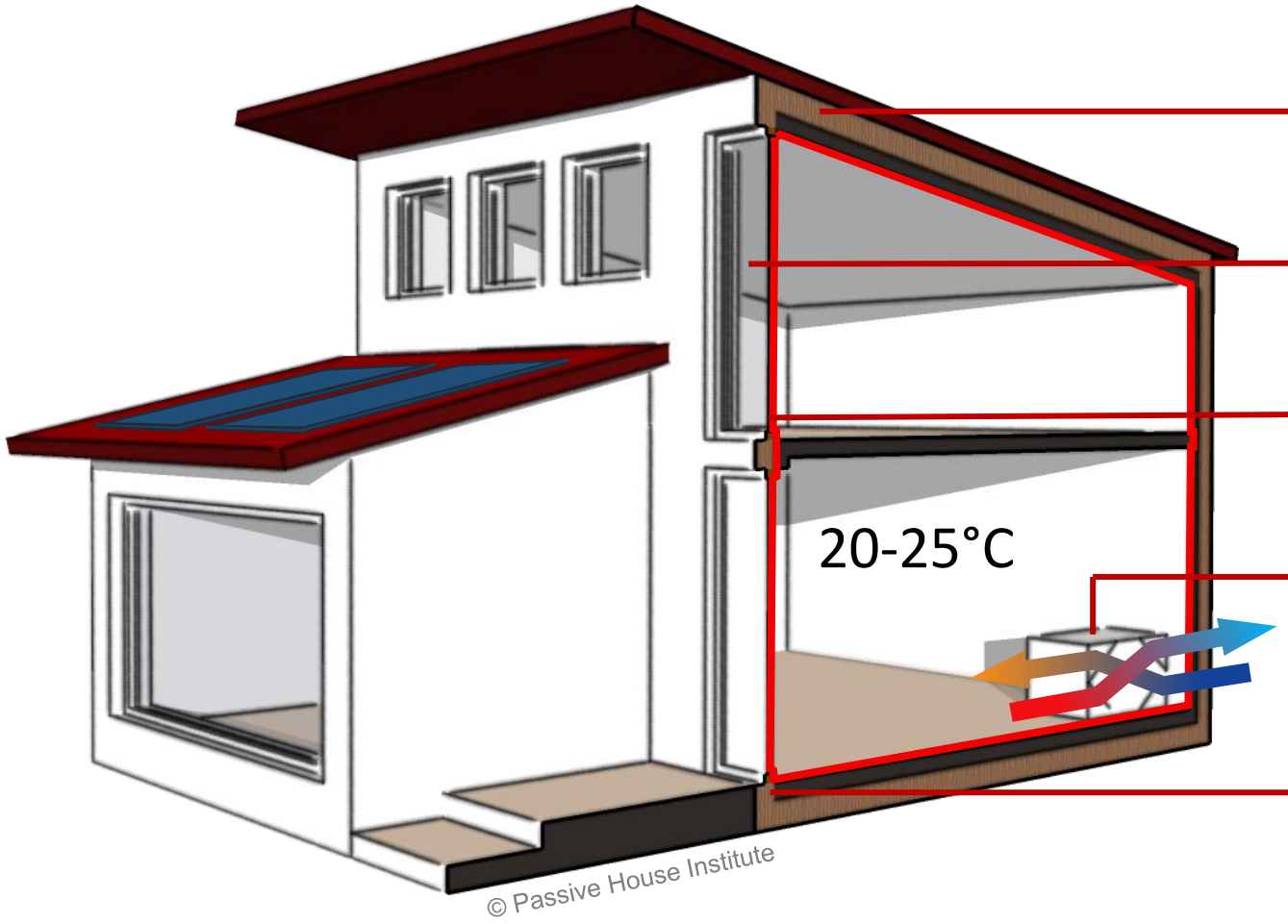
Passive House Institute, Germany

Passive House Institute

High Performance Standards

Current building practices

Up to - 90% heating - 80% cooling



5 Passive House Principles

Continuous insulation
Reduces heat losses/gains*

Passive House windows + shading
Enjoy/avoid* solar gains

Continuous airtightness
Prevents drafts + moisture problems

Ventilation unit
With heat/humidity recovery*
Provides fresh air 24/7!

No thermal bridges
Limit weak points

* Climate dependent

65 000+ Passive House units worldwide


Qingdao Passive House Technology & Experience Center
ID 4674 © Qingao Sino-German Ecopark


V. Senger School, Frankfurt | ID 1955 © Mara Monetti Fotografie


Can Tanca Passive House Premium, Ibiza
ID 5253 © Terravita Construye


Star Garment Innovation Center, Sri Lanka © Ganidu Balasuraya


Cornell Tech, New York | ID 5202 © Handel Architects

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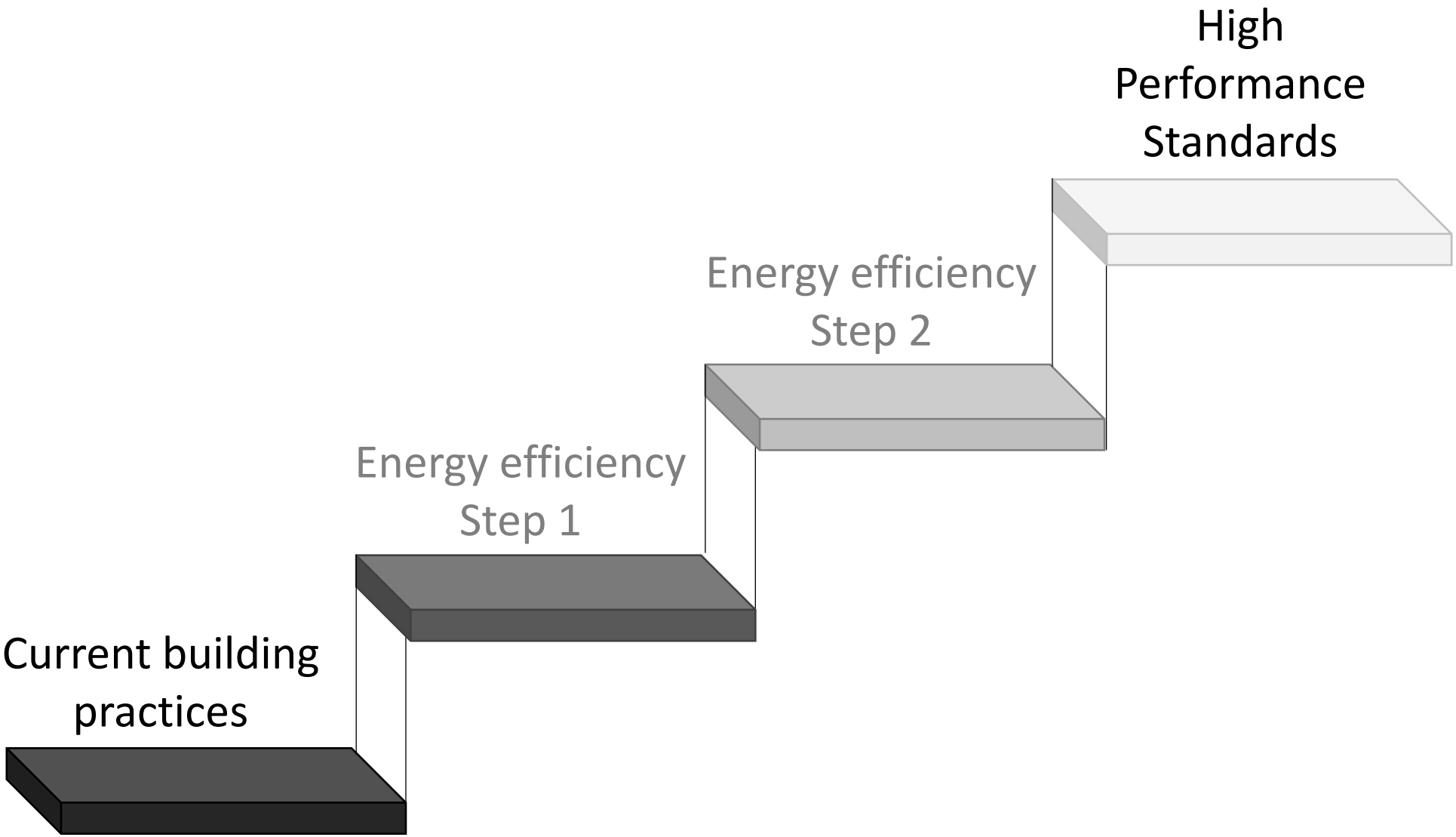
High Performance Standards

Knowledge gap
Components availability
Investment costs

Current building practices


High Performance Standards
Energy efficiency Step 2
Energy efficiency Step 1
Current building practices

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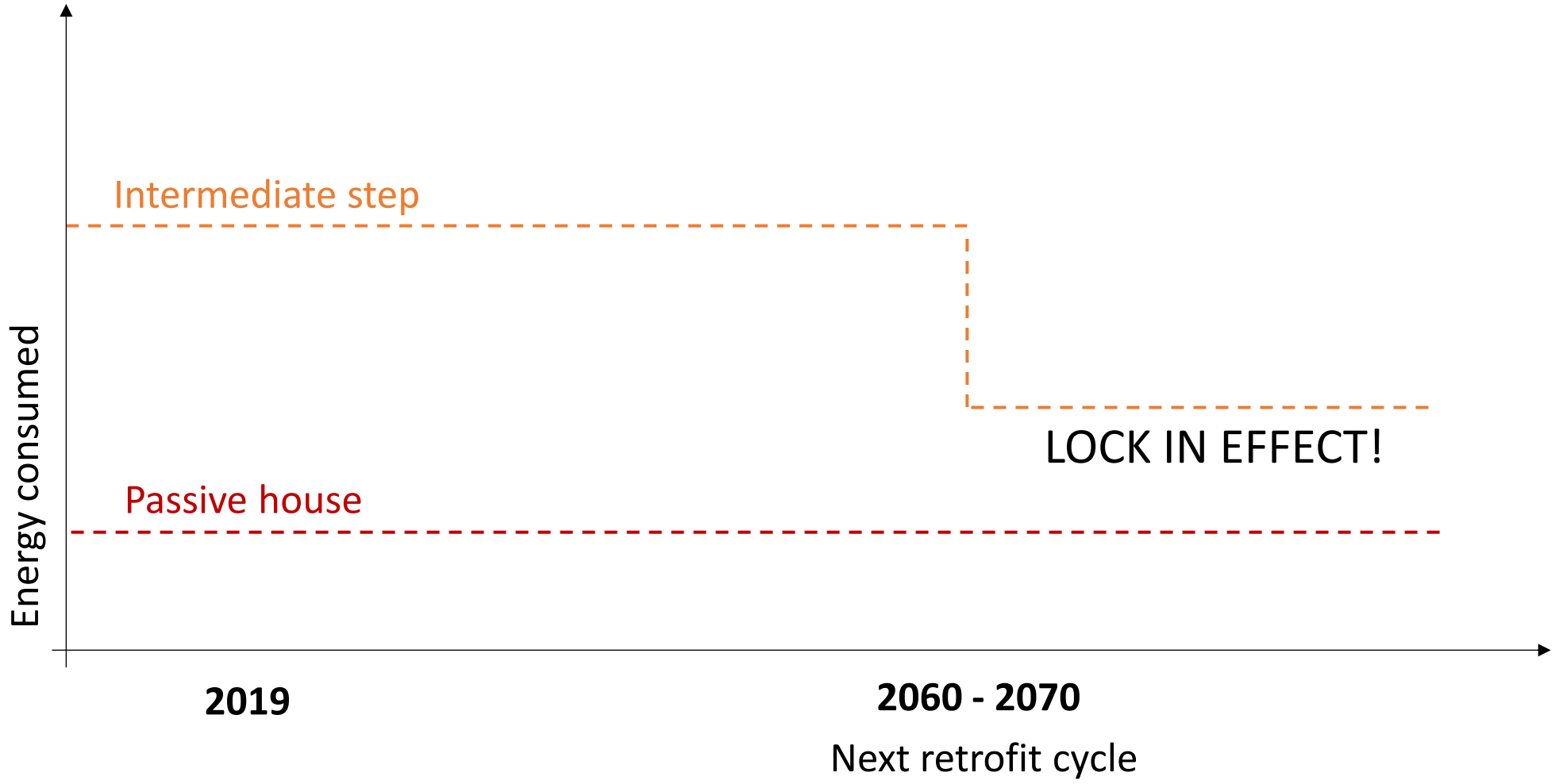
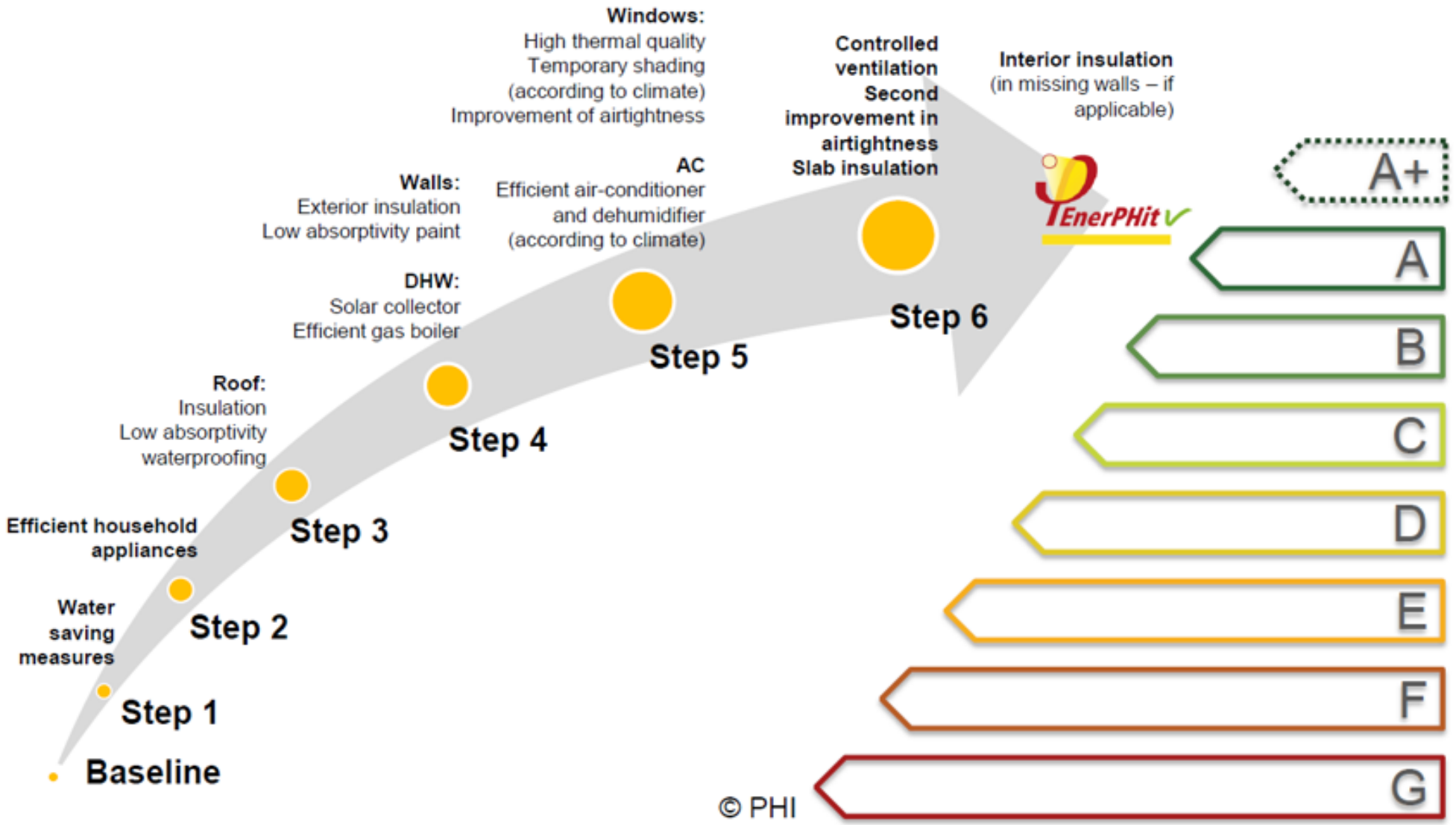
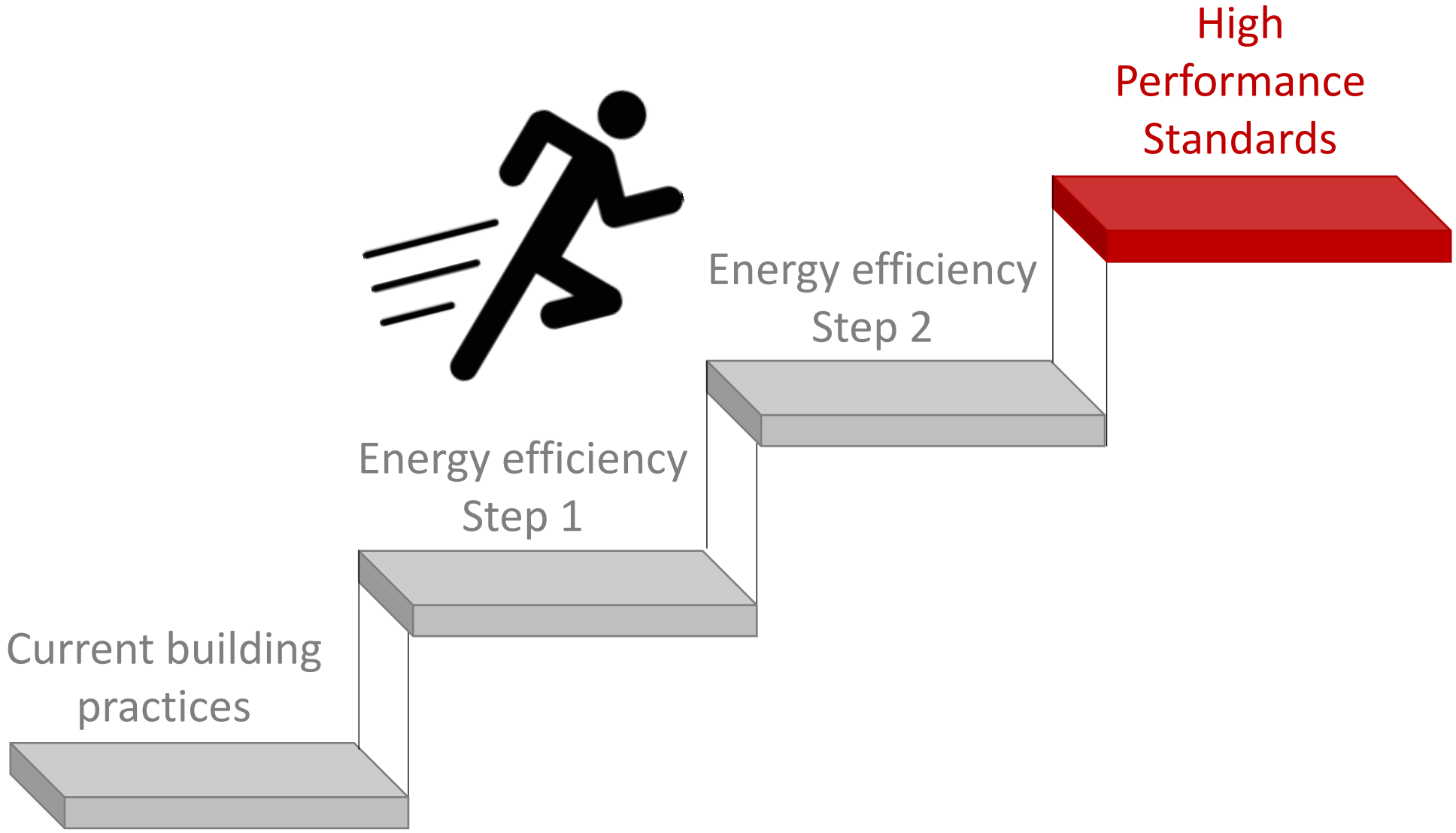

Intermediate step
LOCK IN EFFECT!
Passive house
Energy consumed
2019
2060 - 2070
Next retrofit cycle



Concept for the step-by-step implementation of energy efficiency measures in existing housing in Mexico. Source: NAMA Vivienda Existente; Authors: PHI, IzN Friedrichsdorf, GOPA Consultants; Review and supervision: CONAVI, Infonavit, GiZ


High
Performance
Standards
Energy efficiency
Step 2
Energy efficiency
Step 1
Current building
practices

Financial incentives

- Better loan rates
- Subsidies for buildings
- Subsidies for training & component innovation

Brüssel, Belgium
2007: Exemplary Building call

Bushbury Hill Primary School | ID 2955 © Thomas Vale Construction

Non financial incentives

- Plots for high performance buildings only
- Extra floor area, height, density allowance
- Permit fast-track

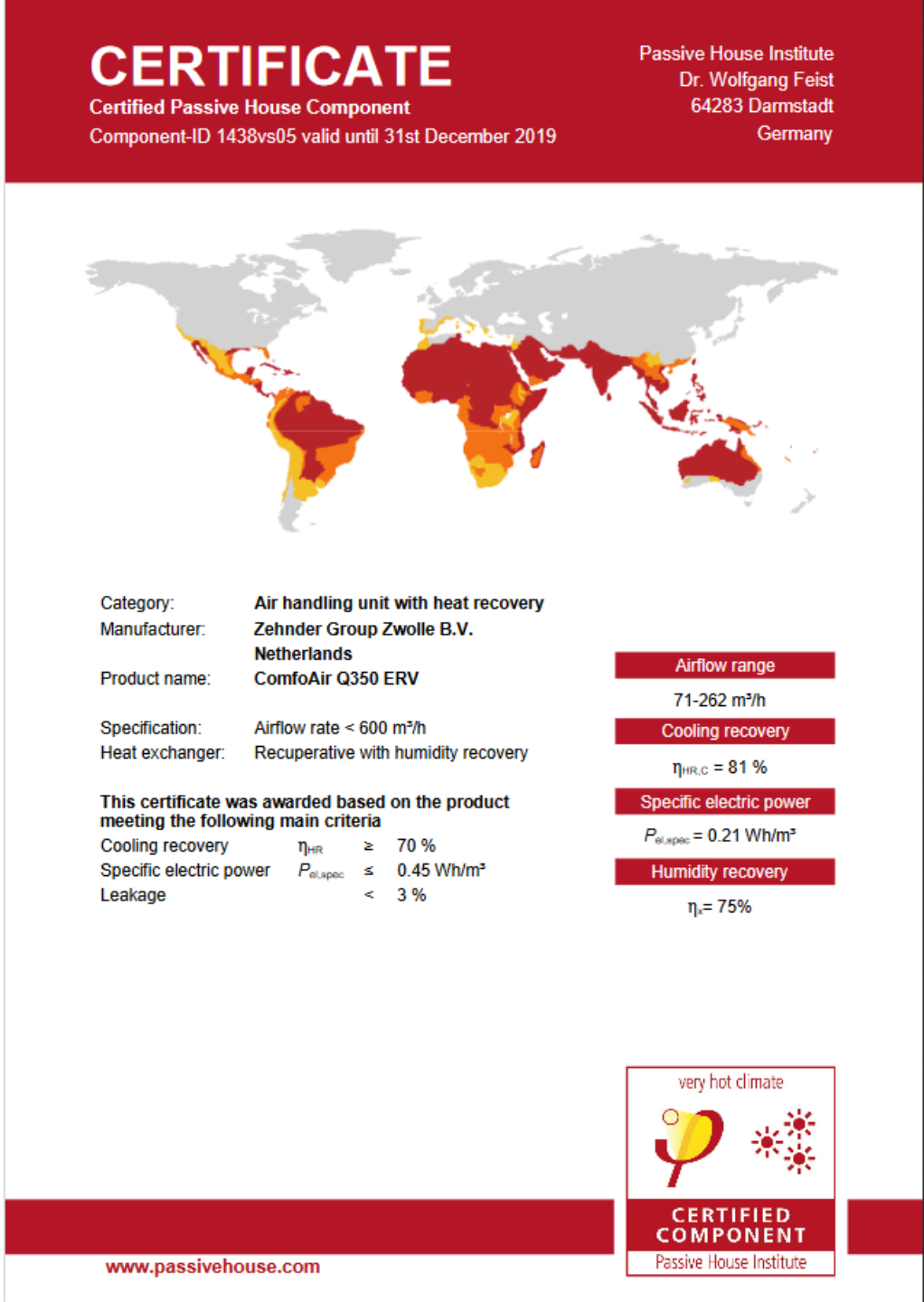
City of Vancouver, Canada
2015: 1 certified Passive House
2019: **2200** Passive House units

Passive House District Bahnstadt in Heildelberg © Passive House Institute

Remove hurdles

- Resolve code compliance issues
- Alternative compliance ways
- Component certification
- Studies (cost, feasibility)

Section 408 Passive House in NY Stretch Energy Code, USA



CERTIFICATE

Certified Passive House Component

Component-ID 1438vs05 valid until 31st December 2019

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany

Category:	**Air handling unit with heat recovery**
Manufacturer:	**Zehnder Group Zwolle B.V. Netherlands**
Product name:	**ComfoAir Q350 ERV**
Specification:	Airflow rate < 600 m³/h
Heat exchanger:	Recuperative with humidity recovery

This certificate was awarded based on the product meeting the following main criteria

Cooling recovery	η_{HR}	≥	70 %
Specific electric power	$P_{el,spec}$	≤	0.45 Wh/m³
Leakage		<	3 %

Airflow range

71-262 m³/h

Cooling recovery

$\eta_{HR,C}$ = 81 %

Specific electric power

$P_{el,spec}$ = 0.21 Wh/m³

Humidity recovery

η_x = 75%

very hot climate

CERTIFIED COMPONENT
Passive House Institute

www.passivehouse.com

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Lead through example

- Municipal buildings
- Educational buildings
- Social housing

Frankfurt, Germany
since 2003: Schools built
to Passive House standard

V. Senger School | ID 1955
© Mara Monetti Fotografie

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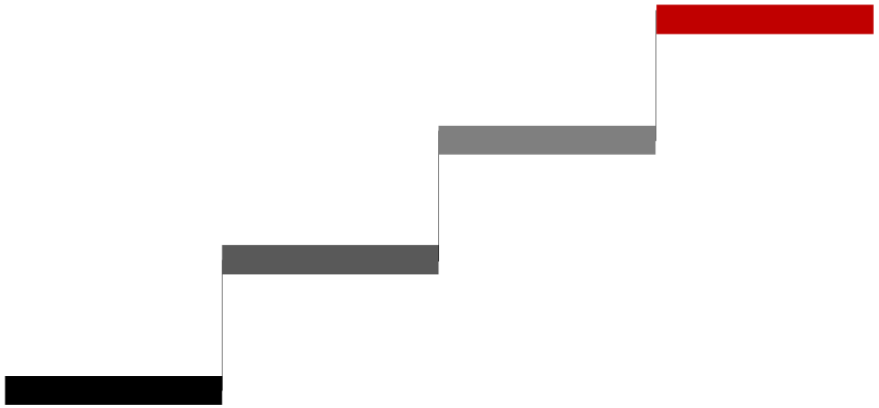
Stepwise approach.
Policies to foster greater efficiency.



Frankenberg | ID 4882 © Michael Tribus Architecture