Alliance for
Internet of Things
Innovation

AIOTI Signature Event • 27 September 2022

Built Environment (Em)powering the Future

Erik van Wijk

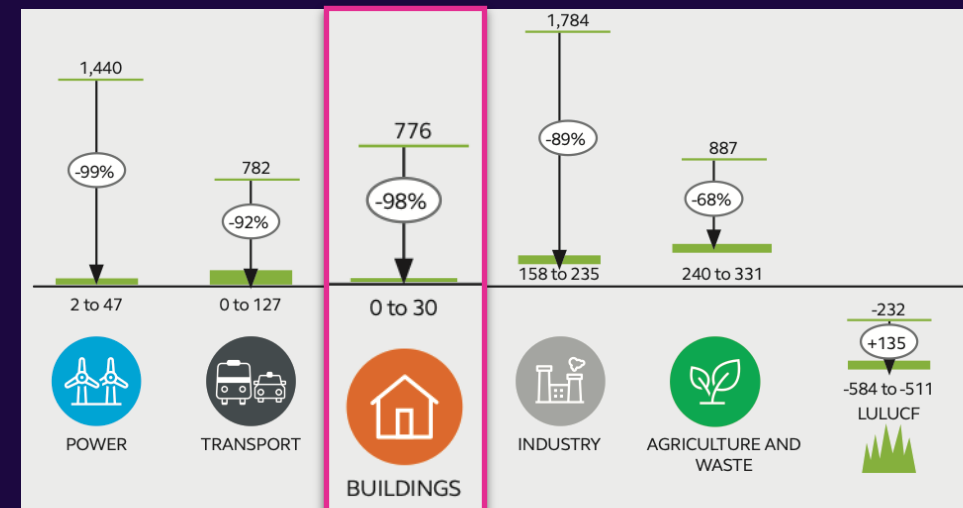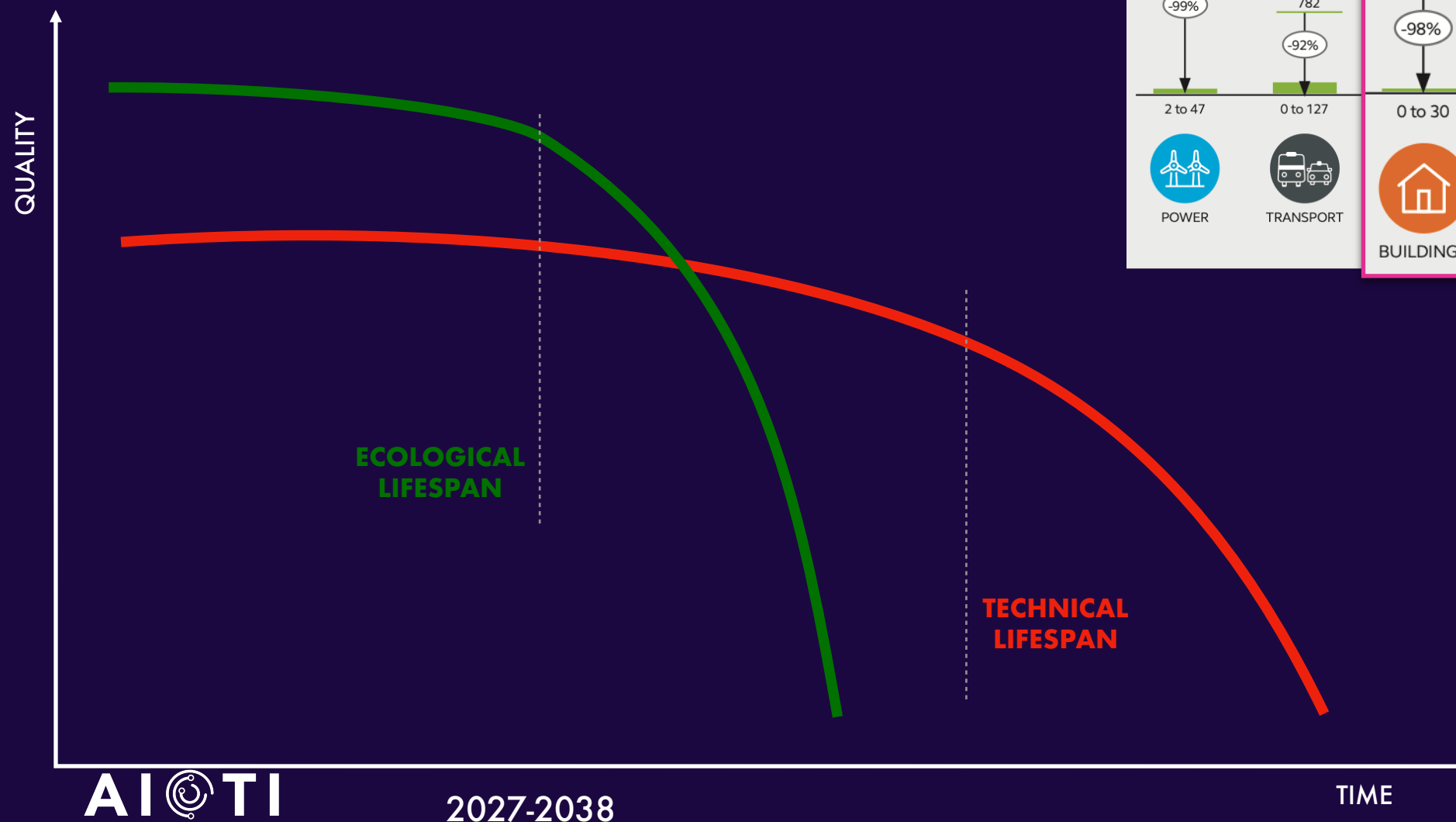**Chairman of AIOTI WG Buildings (TheValueFactory | DeWaardeFabriek)**

Opportunity or Challenge
ECOLOGICAL LIFESPAN LESS THAN TECHNICAL LIFESPAN = EXISTENTIAL CRISIS

QUALITY

ECOLOGICAL LIFESPAN

TECHNICAL LIFESPAN

TIME

2027-2038

POWER
1,440
-99%
2 to 47

TRANSPORT
782
-92%
0 to 127

BUILDINGS
776
-98%
0 to 30

INDUSTRY
1,784
-89%
158 to 235

AGRICULTURE AND WASTE
887
-68%
240 to 331

LULUCF
-232
+135
-584 to -511

Our housing, nutrition and transport is **70-75**% of our Carbon Footprint

Reduction required of
90+%

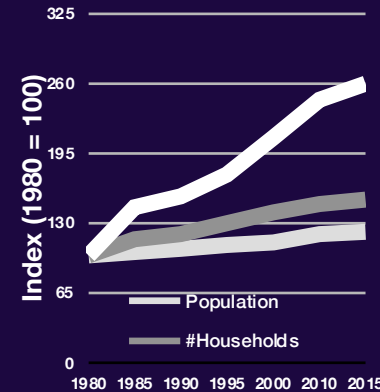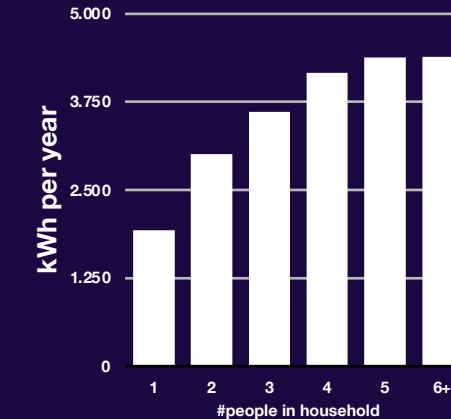AI⦿TI

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IMPACT ON LIVEABILITY ...

- **Lack of affordable housing**
- **Often neighbourhood design feeds unsafe feelings**
- **Rapidly rising (energy) poverty**
- **Social isolation and loneliness: bigger problem even than housing affordability**
- Increasing number of weather extremes (flooding, draughts, heat and so on) are **major threats** to our green infrastructure, liveability of the urban space, biodiversity, drinkwater reserves and even foundations of buildings.

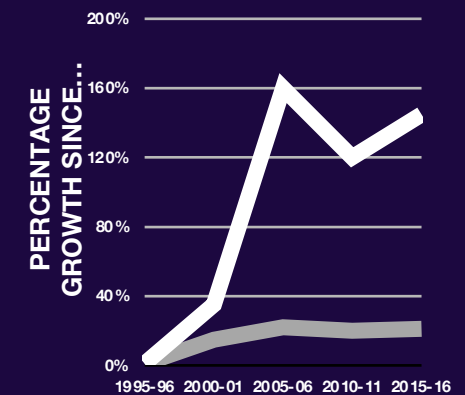## Population growth & #households (NL)
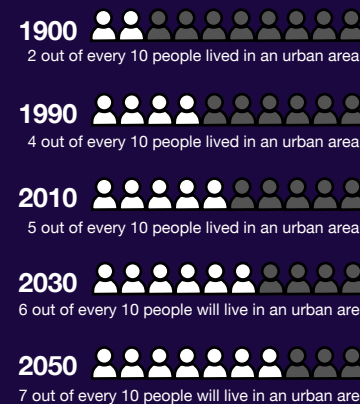
Source: Central Bureau for Statistics

Household size & kWh/yr (NL)

House prices vs. wage rises

Increasing Urbanisation

1900
2 out of every 10 people lived in an urban area

1990
4 out of every 10 people lived in an urban area

2010
5 out of every 10 people lived in an urban area

2030
6 out of every 10 people will live in an urban area

2050
7 out of every 10 people will live in an urban area

Healthcare Cost (NL)
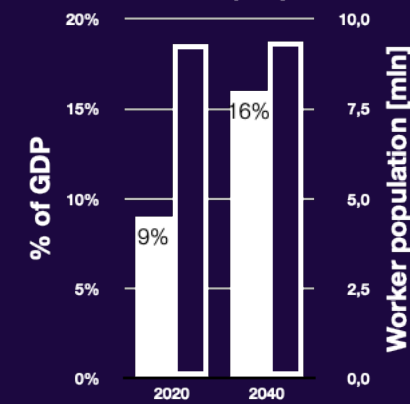
The built environment is responsible for 50% of the EU CO2 emission.

Building Operation 36%

Building Construction 14%
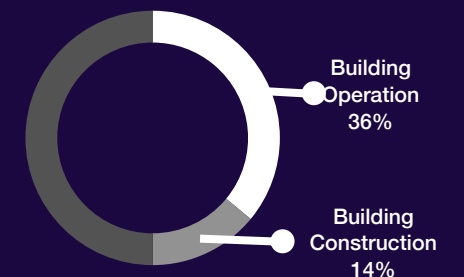
THE FUTURE OF THE EUROPEAN
BUILT ENVIRONMENT

What will the European build environment look like in **2050**? It is shaped by the effects of climate change, resource scarcity, changes in population, urbanization, and focus on health and wellbeing. Buildings integrate a vast amount of technology that connect buildings to information management and sharing platforms. Buildings have evolved into temporary storage of circular materials and products and have become datahubs that support optimal (energy) efficiency and wellbeing.

BUILDINGS FOCUS ON PERFORMANCE

The sustainability performance, energy performance, and other performances are central drivers for comfortable living and working, and also determine the value of a building.

ENABLING WORKING AND LIVING IN A 24-HOUR ECONOMY

In our 24-hour global economy buildings will provide combined working and living space. Leisure, sports, shops and other amenities are combined in buildings that provide 24-hour connectivity.

CLIMATE RESILIENT

Buildings are entirely climate resilient: green, energy neutral buildings that are designed to withstand floods and heat stress and that are part of climate resilient cities and urban areas.

CIRCULAR BUILDINGS

Buildings are circular: built with reused materials and/or biobased materials, are modular and deconstructable. They have become a temporary storage of materials and products.

FLEXIBLE BUILDINGS

Buildings will facilitate flexible use. They are adapted for changes in use on the short term, while being constructed for the long term. Smaller and flexible units will provide living spaces for the growing urban population.
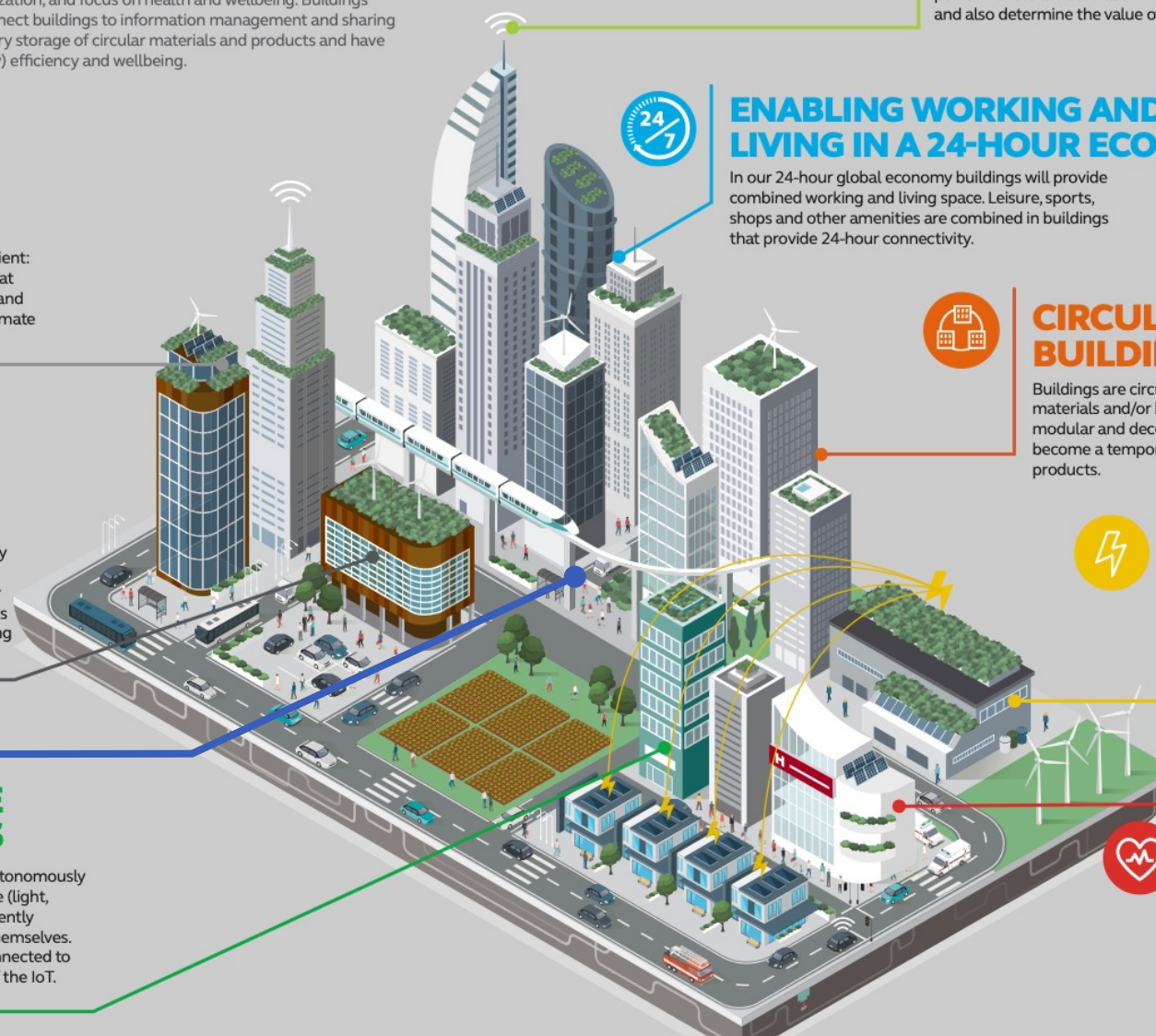
ENERGY POSITIVE

Buildings create energy through photovoltaic solutions and are highly energy efficient and independent of fossil fuels. Buildings are connected to a smart grid to share and store electricity and heat.

GENERATE SOCIAL + COMMUNITY VALUE

COGNITIVE BUILDINGS

Buildings will be able to autonomously manage its internal climate (light, temperature, air) and efficiently adjust e.g. energy use by themselves. Cognitive buildings are connected to smart grids and are part of the IoT.

SUPPORT A HEALTHY LIFESTYLE

Buildings provide a healthy environment: healthy noise management, optimal temperature management, clean air and daylight. The design fully supports the wellbeing of its users.

Thinking of Societal Impact
two approaches can be found in policy and business:

Approach A:
Climate change is triggered by too high CO_2 emissions, so let's reduce CO_2 emissions.

Approach B:
Climate change by too high CO_2 levels is the effect of mankind accepting to manufacture and consume outside planet boundaries.
How can we transition back to living within planet boundaries, while maintaining life quality for all, at a speed that prevents overshoot?

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In this session we will explore how we can unlock the promise of technologies like IoT and Blockchain in the Built Environment and really initiate a transformation in this space, ensuring a thriving future for us and generations to come. How can we bridge the gap of exponential tech development and the acceptance by the public at scale?
How will these technologies help to accelerate the challenges we as society are facing?

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Thank you for listening

Any questions?

You can find us at @AIOTI_EU or email sg@aioti.eu

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