



8th Nordic Passive House Conference
Adaptive and interactive buildings and districts

Regenerating the Business Landscape for Energy

Fortum / Rami Piik
28 September 2017
Helsinki

Fortum in brief

We are the largest electricity retailer in the Nordics with **2.4 million** customers. And one of the leading heat producers globally

96 % of our electricity production is CO₂ free in Europe, **62%** in all operations

Our core

Hydro and nuclear
Combined heat and power production
Circular economy
Energy-related products and expert services

8,100 professionals in the Nordics, the Baltics, Russia, Poland and India

2/3 of our power production is **hydro and nuclear**

We are putting our growth strategy to work

Megatrends

Climate change and resource efficiency
Urbanisation
Active customers
Digitalisation, new technologies

Mission

We engage our customers and society to drive the change towards a cleaner world.
Our role is to accelerate this change by reshaping the energy system, improving resource efficiency and providing smart solutions. This way we deliver excellent shareholder value.

Vision

For a cleaner world



Strategy



Drive productivity and industry transformation



Grow in solar and wind



Create solutions for sustainable cities



Build new energy ventures

**We drive productivity and
industry transformation**



**Our focus
going
forward**

**We create solutions for
sustainable cities**



We grow in solar and wind



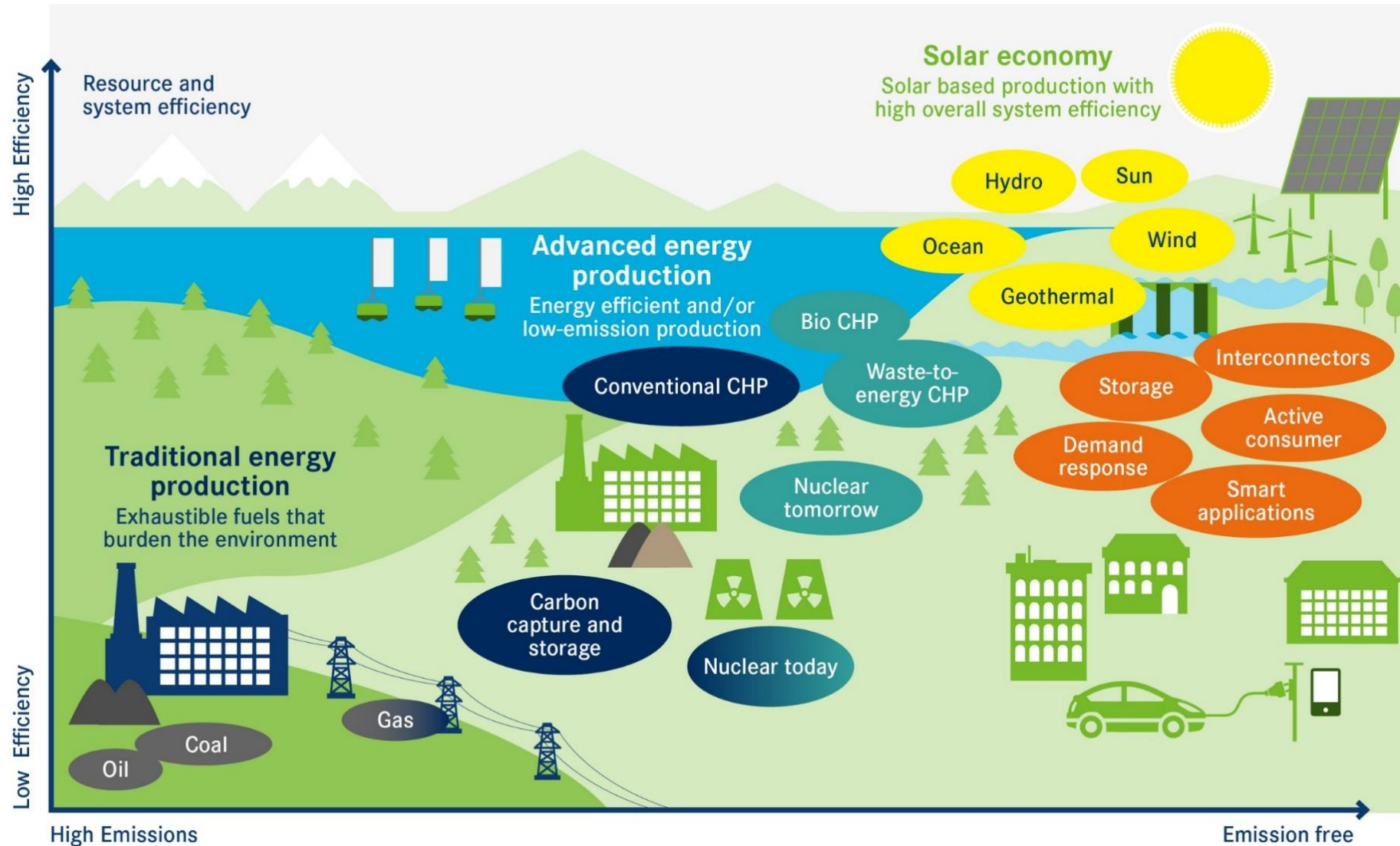
**We build new energy
ventures**



We enter partnerships for sustainable cities

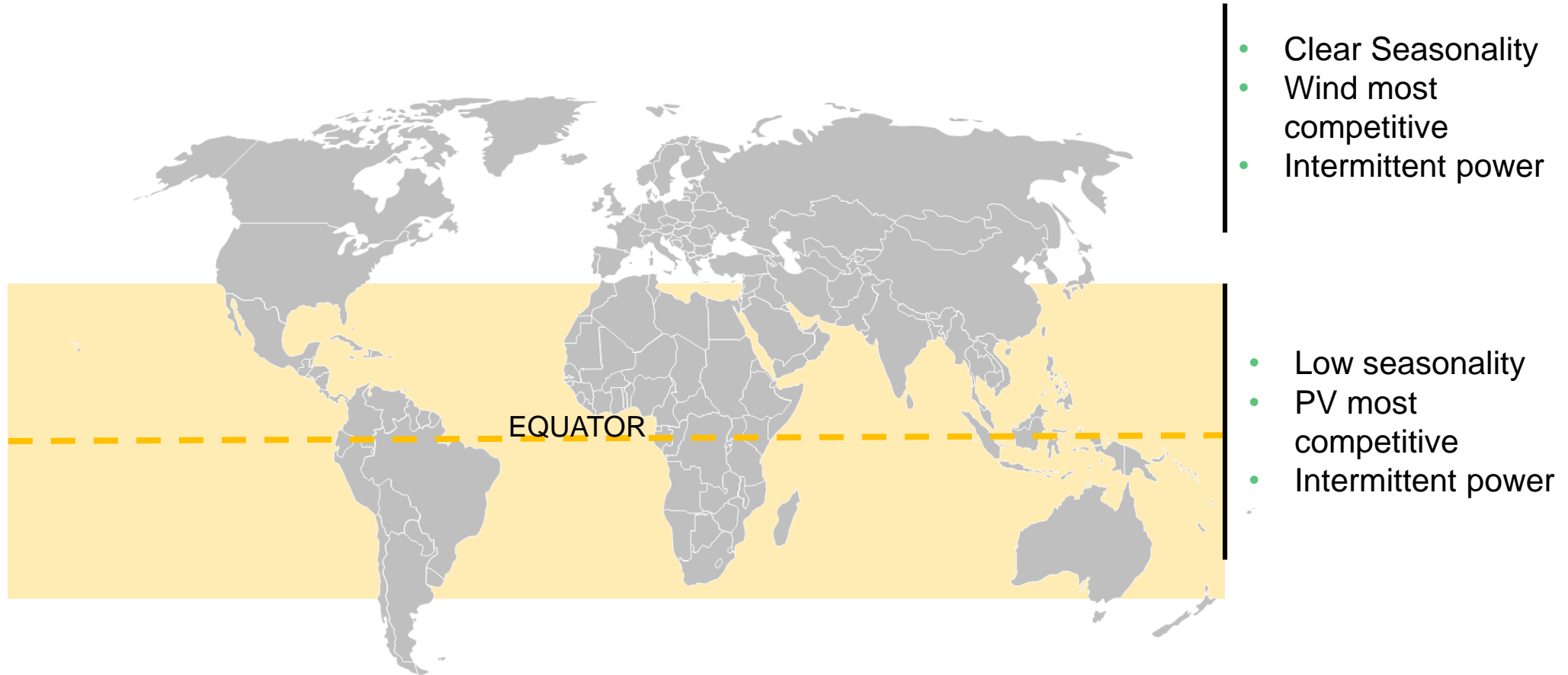
We are supporting **Stockholm** and **Espoo** in the achievement of their goal to be **carbon-neutral cities** by 2040 and 2050.

Transition towards Solar Economy is ongoing



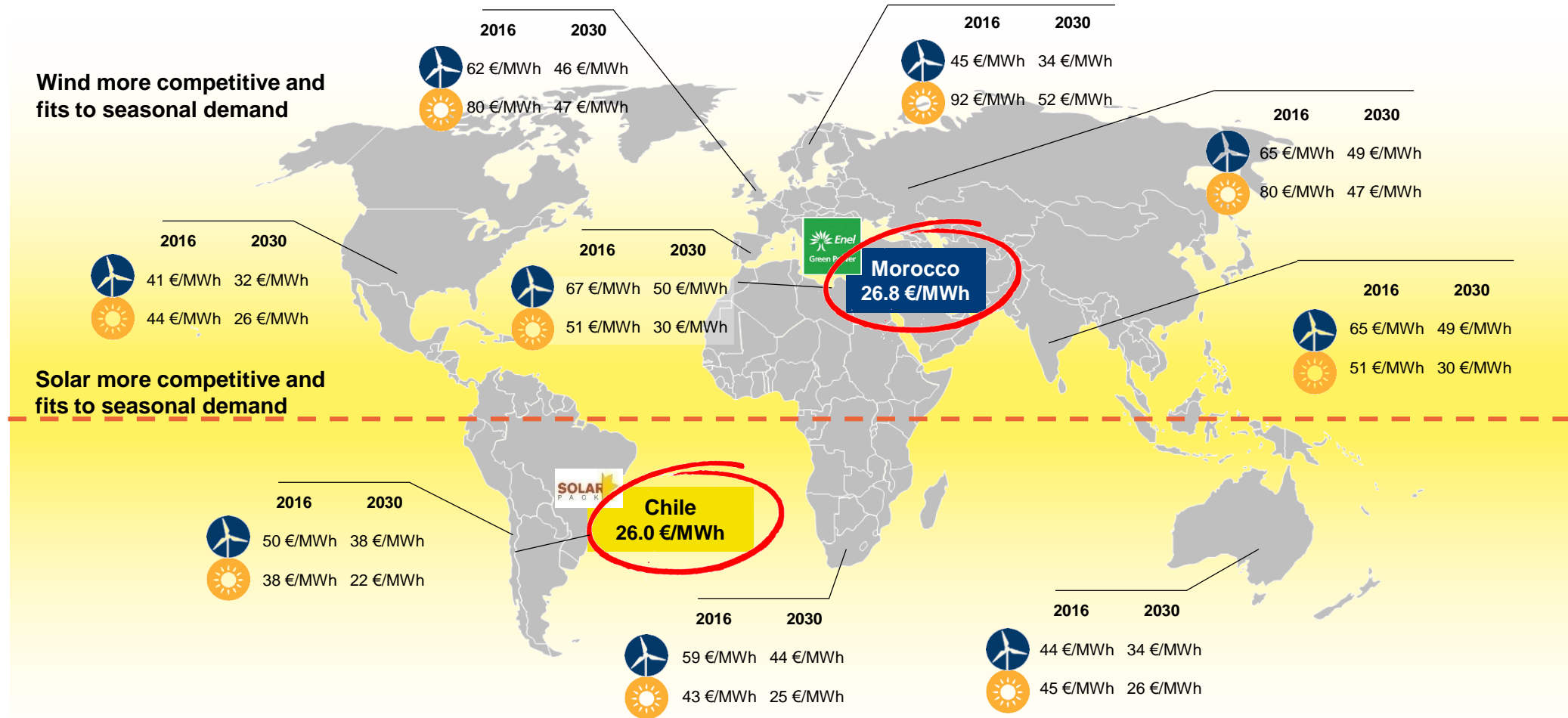
Future energy system features:

- Security of Supply a limited resource
- Energy a non limited resource



Solar more competitive in sunbelt, wind in North – in retail, solar compelling everywhere, also in the Nordics

World Solar and Wind LCOE's using newest publicly available data



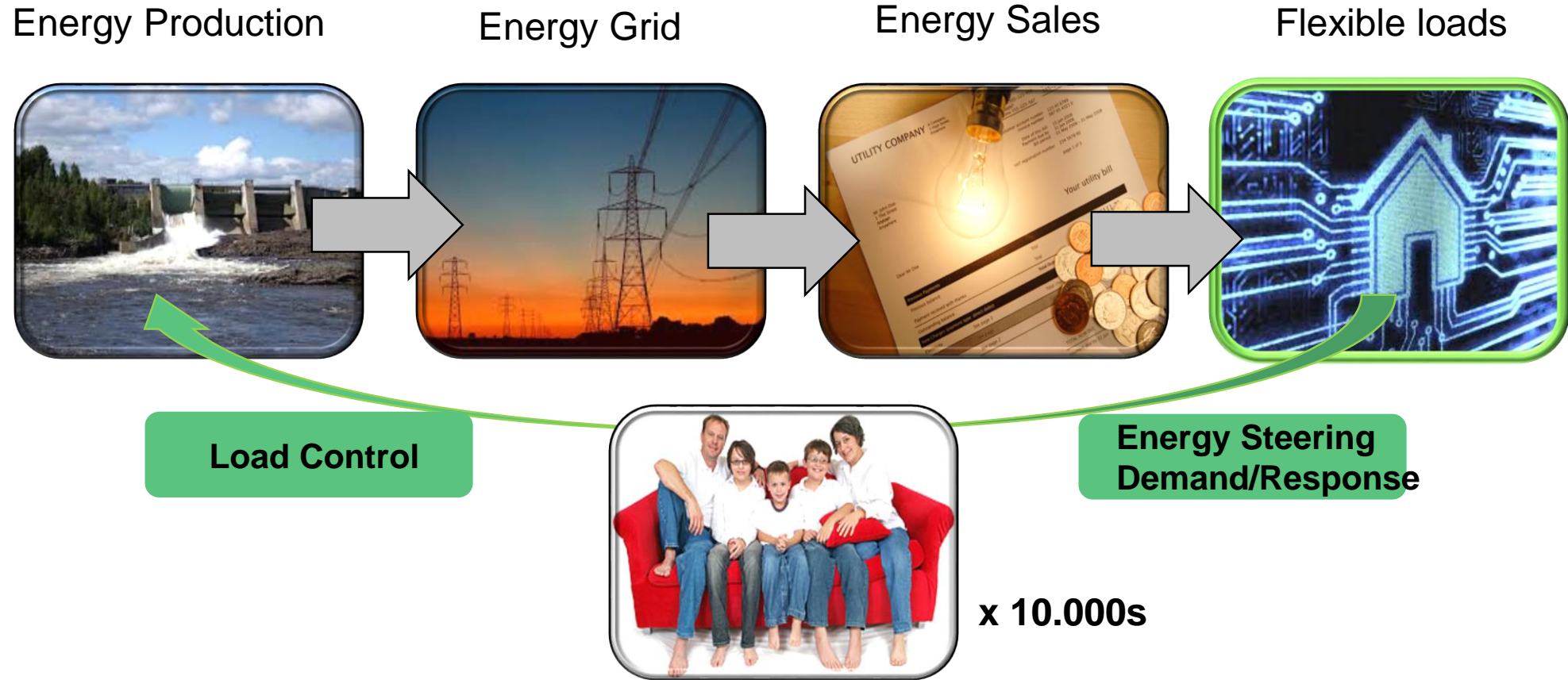
NOTE: Solar and wind resources and CAPEX may largely vary by individual projects, even on same region, thus impacting LCOE. Hence, figures are indicative and do not aim to present our geographical preferences for given technologies but rather illustrate progress of wind and solar globally, long-term.

PV LCOE assumptions based on EU PV Technology Platform report and EU PVSEC 2015 paper. Wind CAPEX and OPEX Sweco: Incitamenten för investeringar i kraftproduktion, Capacity factors from BNEF LCOE low case. Indicative wind capacity factor for Russia from IFC Advisory: Services Russia's New Capacity-based Renewable Energy Support Scheme

LCOE assumptions:

- 7% real WACC
- CAPEX, OPEX globally uniform; lifetime solar 30y, wind 25y
- Assumption that capacity factor will increase for solar 7.5% and wind by 15% from 2016 to 2030
- 20% higher CAPEX for the rest of the world compared to low cost Nordic
- Uniform 20% corporate tax assumed

The Digitalized Utility 2025 – New Operative Model



When the amount flexible loads increases – the aggregated energy volumes that can be steered will lead increased production efficiency and new operative models.

Developing The Smart Energy eco-system

Demand Response/Energy Steering

Energy steering is core in the future energy society. To connect and disconnect energy devices will increase energy efficiency and energy security.

Electric Vehicle

The Electric Vehicle will not only be an environmental way of transportation but also a new large electricity consumer that can be disconnected and connected as part of energy steering. In addition the battery in the car will give good possibilities for energy storage.

Smart Home

The Smart Home will be filled with connected devices that steered and managed remotely. The Smart Home will also provide security and comfort solutions to the customer. The Electric Vehicle is part for the connected home.

Energy Storage

Energy Storage will further improve the Local Energy Production and provide electricity at times when the sun is not shining. Storage will be part of the energy optimized home.



Energy Efficiency

Energy Efficiency will be a central part of the Smart Home. Electricity, heat and water will be individually metered, managed and visualized.

Local Energy Production

Solar Cells will be part the Smart Home and further improve energy management solutions. For the Electric Vehicle the Solar Cells will be “the oil pump in the back yard”.

Our services will change our customers' lives

Solar
panels

Electricity
retail

Smart
heating

EV
charging

Smart
living
solutions

Virtual
power
plants

Insurances

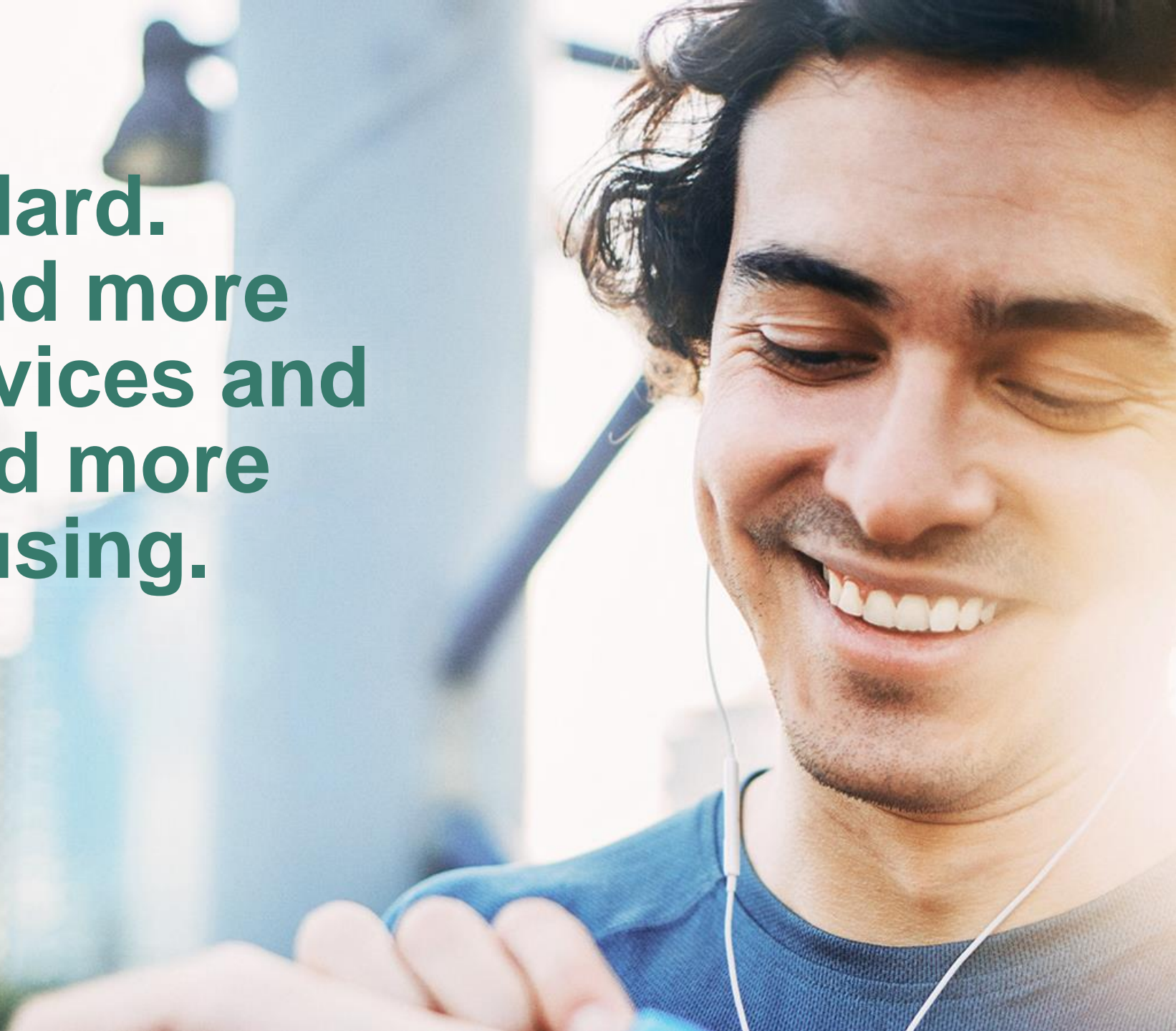
We are building smart and helpful services that give our customers peace of mind.



**The world is
changing**



**Digitalization
is a new standard.
People demand more
intelligent services and
products – and more
intelligent housing.**



People are also looking for new ways to live more sustainable life and taking better care of their environment.



**However, the
essence of home
will never change**



Home is comfortable and the safest place in the world



For most of us, home is the biggest investment in our lives



The most valuable things in life are usually in the home



**Also those,
which are
priceless**



**By taking care of home
we have always taken
care of things we value
the most**



**In order to make that
easier for us, today,
your home
can take care
of itself**



**And even better,
your home can take
care of you and
your family**



Welcome to SmartLiving



Stockholm's Royal Seaport

district as a test bed for modern, sustainable solutions

- New district
- Former industrial area
- SmartLiving installed at 154 apartments

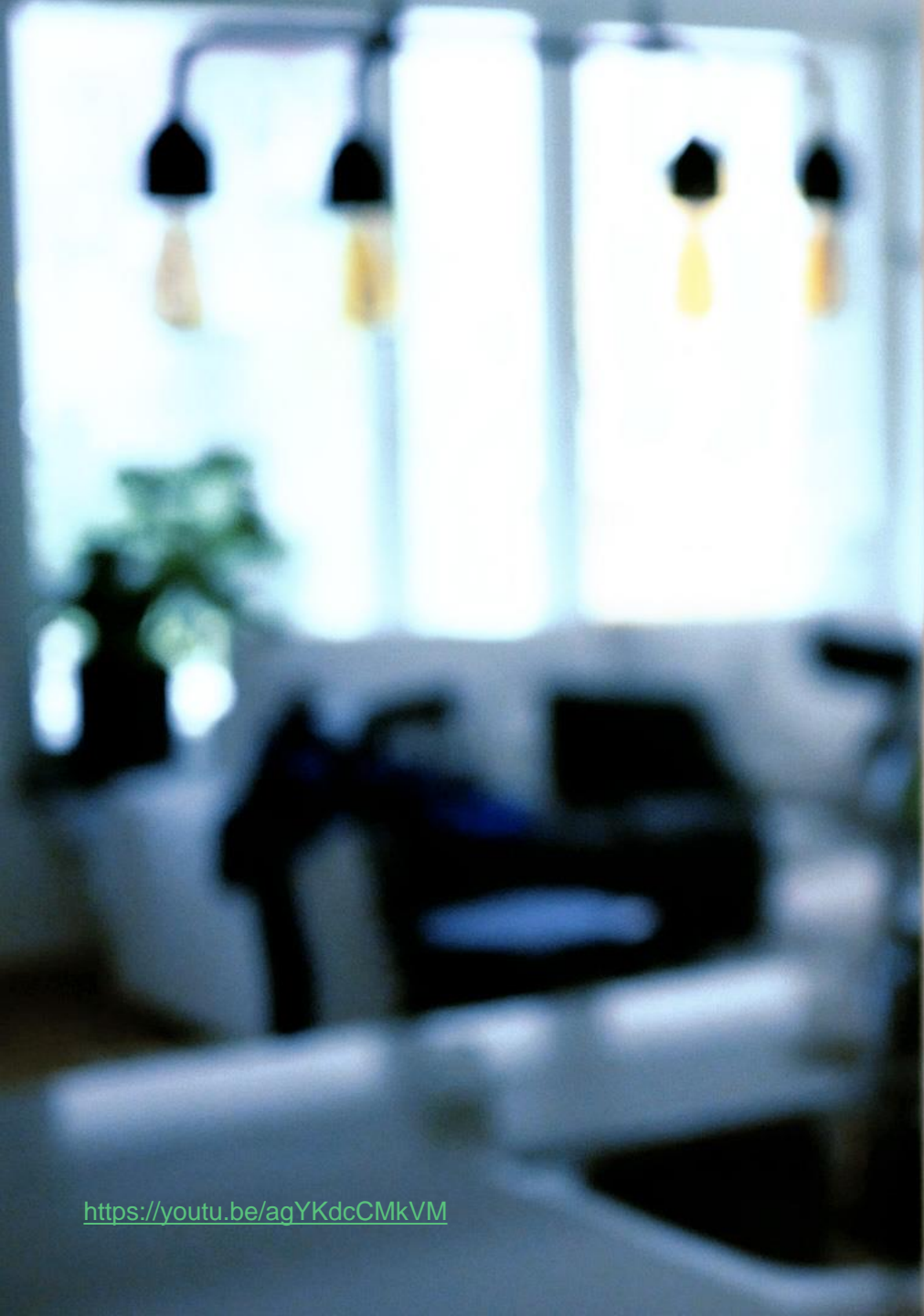
Ambitious environmental goals and visions

- Energy consumption: 55 kWh per square metre a year
- Local electricity production (30%)
- Adapted to climate change
- Fossil-free and climate+ by 2030

An arena for innovations

- Several R&D projects





The solution is developed continuously

Energy & sustainability



Convenience & well-being



Safety & security



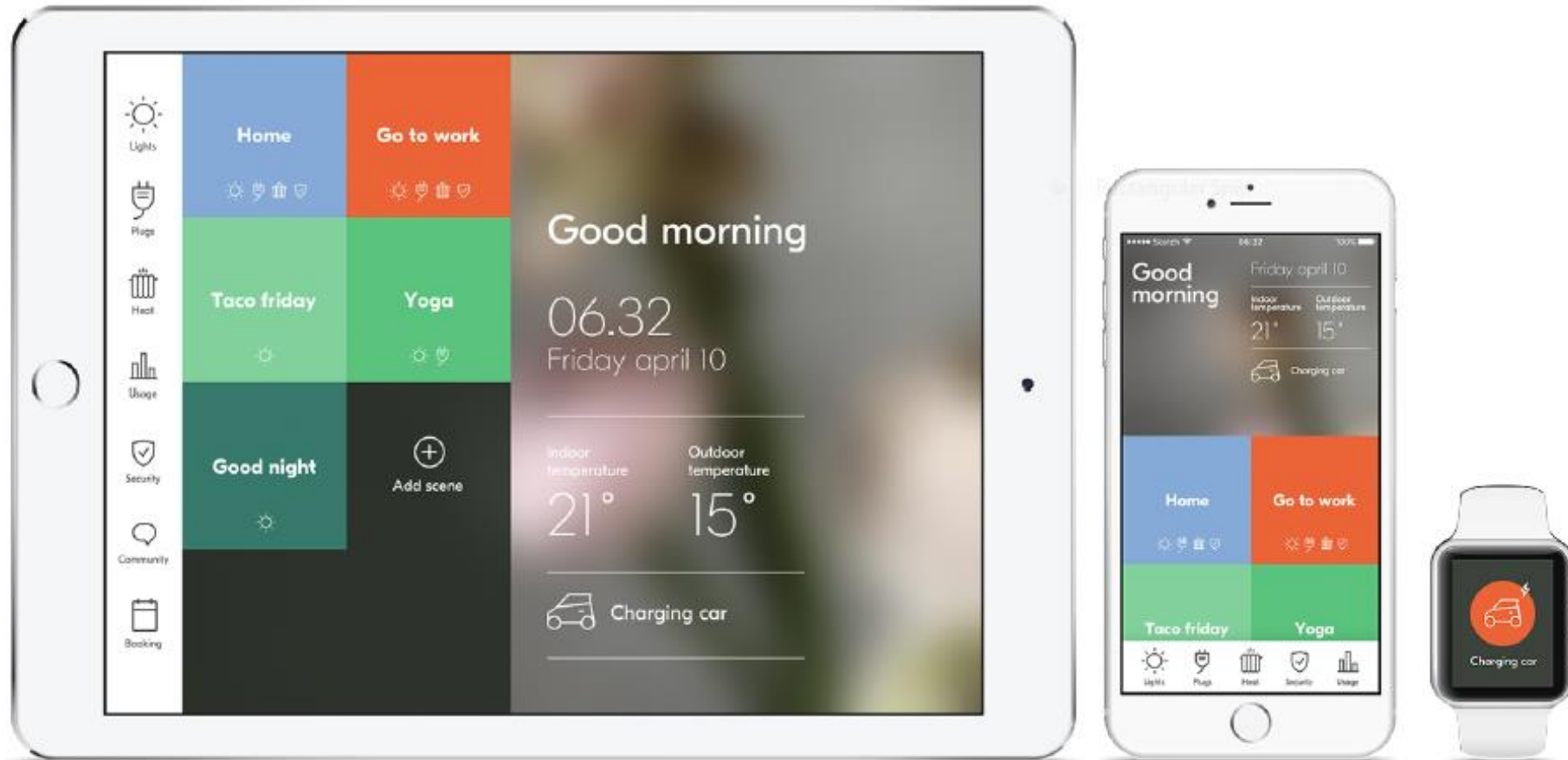
Community



**Everything's fine
at home!**

SmartLiving

New UX is available soon



SmartLiving

all-in-one solution

SmartLiving for end customers

Everything's fine at home!

- SmartLiving is designed to take care of you and your family, your home and your community.
- As a self-learning system, SmartLiving adapts your home to your living habits.
- SmartLiving is easy to use and it gives you all the smart home benefits in one single turnkey solution.
- SmartLiving gives you full control of your energy consumption and also helps to optimize use of electricity. For example, it can charge the electric car when the price of electricity is low.
- Optimum indoor air quality improves your wellbeing.
- Intelligent security and alarms gives you peace of mind: for example, it's easy to schedule lighting to scare away burglars.
- SmartLiving creates more comfortable way of living, decreases the risk of damages to the property and increases the value of your home.
- SmartLiving benefits also communities by increasing comfort and safety.
- Automatic software updates ensure that you will benefit from the continuous development and latest improvements.
- Pre-installed. Easy and simple to use. No hassle.
- **Enjoy your home to the fullest with SmartLiving. Join the change for a cleaner world.**

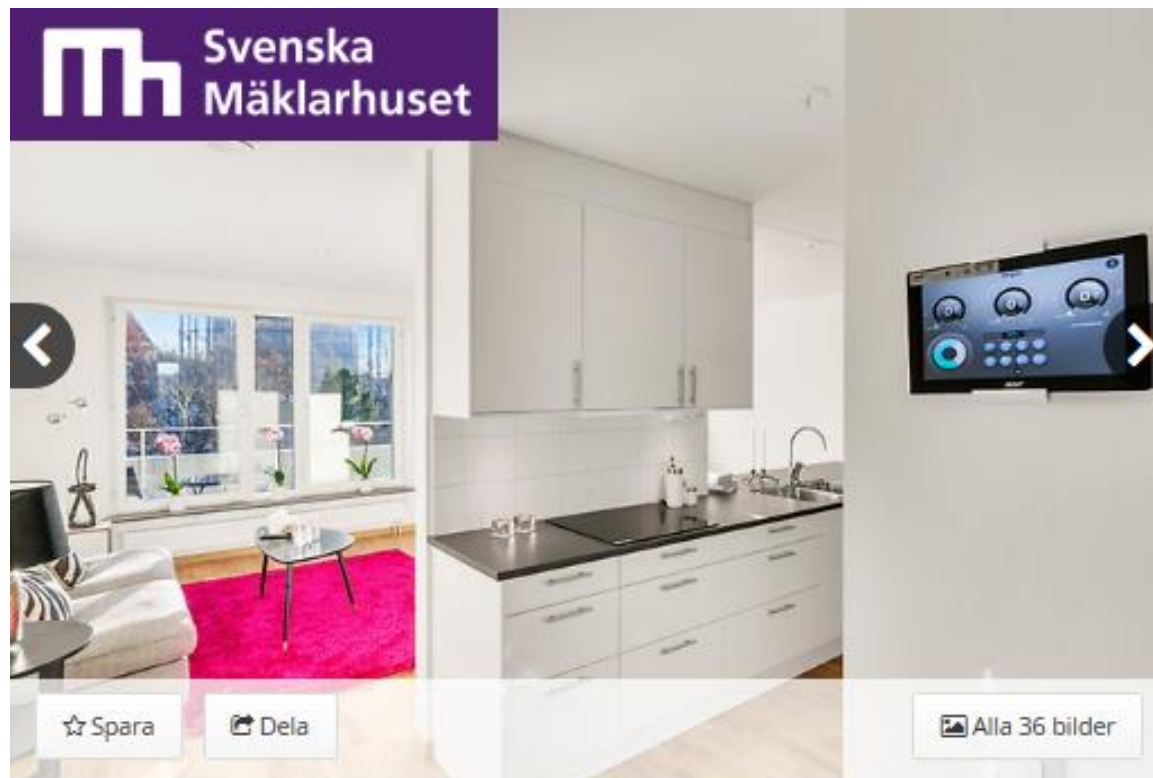


Benefits for residential housing developers and construction companies

- Digital all-in-one solution for new apartment buildings from one supplier.
- Carefree and safe for you. Fortum takes responsibility for the full solution and handles the end customer interface.
- Focus on end user experience (not on devices or technology): SmartLiving makes homes more comfortable, safer and helps to save money and live in a more sustainable way.
- Flexible and adaptable - connects to other building, property and home systems through open interfaces (e.g. solar PV, EV charging, elevators, white goods, building automation).
- Lightweight - Suitable for modular manufacturing
- Continuous development and automatic software updates make the solution future proof.
- SmartLiving helps differentiate and increase the value of new housing.
- Enhance sustainability and strengthen company image as the forerunner.



A smart home as a selling point



Taxgatan 2

Östermalm-NorraDjurgårdsstaden, Stockholm

[Karta & restider](#)

4 895 000 kr

[Bevaka slutpriset](#)

Taxgatan 2

Östermalm-NorraDjurgårdsstaden, Stockholm

[Karta & restider](#)

Högt upp i huset finner ni denna nyproducerade, inflyttningsklara och optimalt planerade tvåa om 66 kvm. Balkongen om ca 14 kvm i fritt söderläge har plats för både loungedel och matbord. Stort ljus vardagsrum med öppen planlösning mot det stilrena köket. **Lägenheten är utrustad med smart teknik där du kan reglera bl.a temperaturen och belysningen eller schemalägga din tvättmaskin och torktumlare så att de startar då elen är som billigast.** Allt detta kan du styra från en läsplatta i lägenheten. Fullt utrustat badrum med tvättmaskin och torktumlare. Rofullt sovrum mot innergård och utsikt mot husarviken. Gott om förvaring i flertalet garderober. Garage i huset! Här bor du nära vattnet i ett expansivt område med all tänkbar närservice så som cafeer, restauranger, matbutik, gym och bank etc. Kommunikationerna är goda med promenadavstånd till ropstens T-bana och bussar som tar dig snabbt in till city.

4 895 000 kr

[Bevaka slutpriset](#)

Fakta

Bostadstyp	Bostadsrättslägenhet
Boarea	66 m ²
Antal rum	2 rum
Avgift/månad	3 735 kr/mån
Pris/m ²	74 167 kr/m ²
Driftkostnad	6 752 kr/år
Byggår	2016

[Räkna på boendet](#)

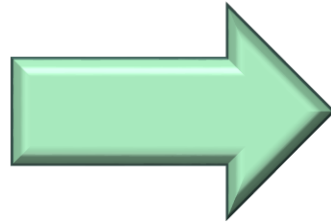
[Läs mer om bostaden hos mäklaren](#)

In car industry the change has already happened

1920



2017



Sm[🏠]rtLiving

Everything's
fine at home



Join the
change

fortum