

Accelerating sustainable solutions for human needs in the fourth industrial revolution

United Nations Climate Change
Global Innovation Hub

DIGITAL
WITH
PURPOSE



GLOBAL COVENANT
of MAYORS for
CLIMATE & ENERGY



An Expanded Climate Innovation Agenda for Cities

The “Expanded Innovation Agenda for Cities” initiative is a part of the UNFCCC Innovation Hub¹ and will be implemented in collaboration with Mission Innovation,² the Global Covenant of Mayors for Climate & Energy,³ ICLEI,⁴ and other partners. The initiative aims at promoting the development and deployment and rapid uptake of transformative 1.5 °C compatible solutions, including technology, policy, financial instruments, cooperation, and business models. Cities are relevant in multiple roles including, providers, enablers, implementers, and exporters of 1.5 °C compatible climate innovations

In preparation for the launch of a global challenge to identify such transformative solutions, an engagement with leading cities is required. Together UNFCCC and partners alongside initial group cities will identify and help accelerate the uptake of strategic climate solutions. The 1.5 °C compatible climate solutions should be resource efficient and affordable enough to support a just transition to an equitable world with the capacity to provide 10 billion citizens with flourishing lives by 2050. This will ensure an outcome of the challenge that is relevant for global sustainability.

The initial group of stakeholders from cities will be invited to present different calls for solutions and/or initiate processes to develop such calls with the support of the UNFCCC secretariat, Mission Innovation, Global Covenant of Mayors, ICLEI, and other relevant partners.

A dynamic solution approach

When the cities are not only reducing – or avoiding – their own emissions, but with focus on needs and utilizing opportunities provided by the 4th industrial revolution they help the rest of the world through export of 1.5 °C solutions for a future with 11 billion citizens living flourishing lives



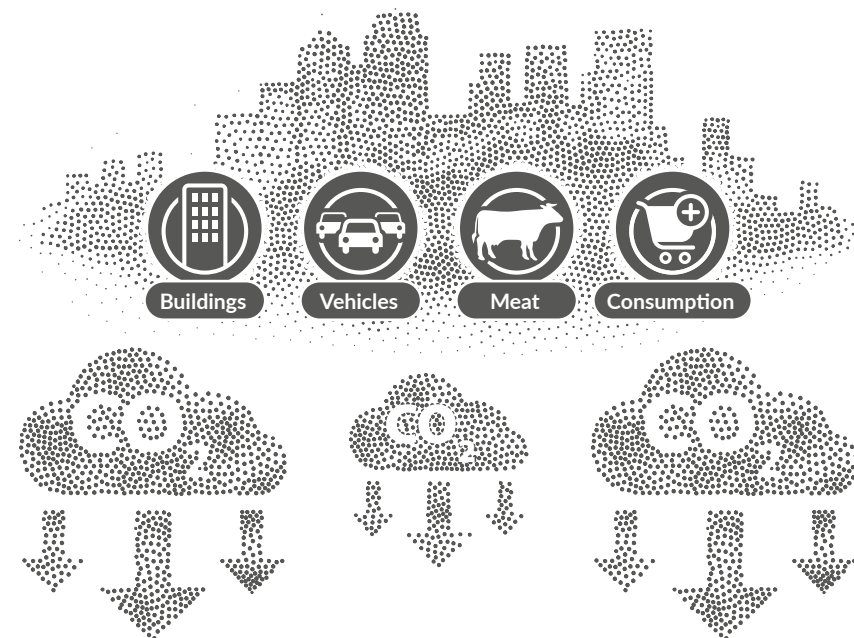
Context

Cities are a major source of emission, but also a major source of innovation and export. With an expanded innovation agenda cities have the potential of moving beyond only reducing, or avoiding, their own GHG emissions and also become providers of the climate solutions the world needs. With a focus on human needs, rather than improvement of existing systems, the urgent need for 1.5 °C compatible solutions can be used by leading cities as a driver for innovation where the cities solve their own challenges while also becoming leading exporters of climate solutions. A “dynamic solution approach”, when the cities are not only reducing – or avoiding – their own emissions, but with the help of opportunities provided by the 4th industrial revolution also help the rest of the world, has the potential to position leading cities as providers of globally sustainable climate solutions.

Through action plans, cities can anticipate the needs of their own citizens as well as the need of citizens around the world, e.g. using normative backcasting scenarios that focus on what is needed (not what is currently seen as possible by different stakeholders), to translate these citizens' core needs into enabling needs and options for infrastructures. Such plans would support 1.5 °C compatible and climate resilient development paths. Then cities can use forecasting exploratory scenarios as well as system analysis to identify how the different options for infrastructures serving different human needs will impact the way other human needs are satisfied. The system analysis will also identify how the options for infrastructures will impact the planet's needs. This will ensure an integrated approach to address holistically the interconnected pathways for the satisfactions of the citizens' needs and the planet's needs.

A plethora of initiatives for climate action in cities exist, but almost all are based on a “static problem approach”, where focus is on how cities shall reduce their own emissions from existing structures rather than explore how human needs can be met in ways that are compatible with a globally sustainable development.

After the Paris agreement⁵ the focus is now shifting from incremental GHG emission reductions in existing systems to sustainable 1.5 °C pathways, that leverages transformative solutions. With a static problem approach, that ignores the many opportunities in the 4th industrial revolution⁶, a 1.5 °C focus tends to result in dramatic end-of-pipe measures, such as CCS or even geoengineering and massive supply-side measures, such as large-scale biofuel projects. Such measures can play an important role, but only if global sustainability and the possibility to deliver flourishing lives for 11 billion are included in the strategies.



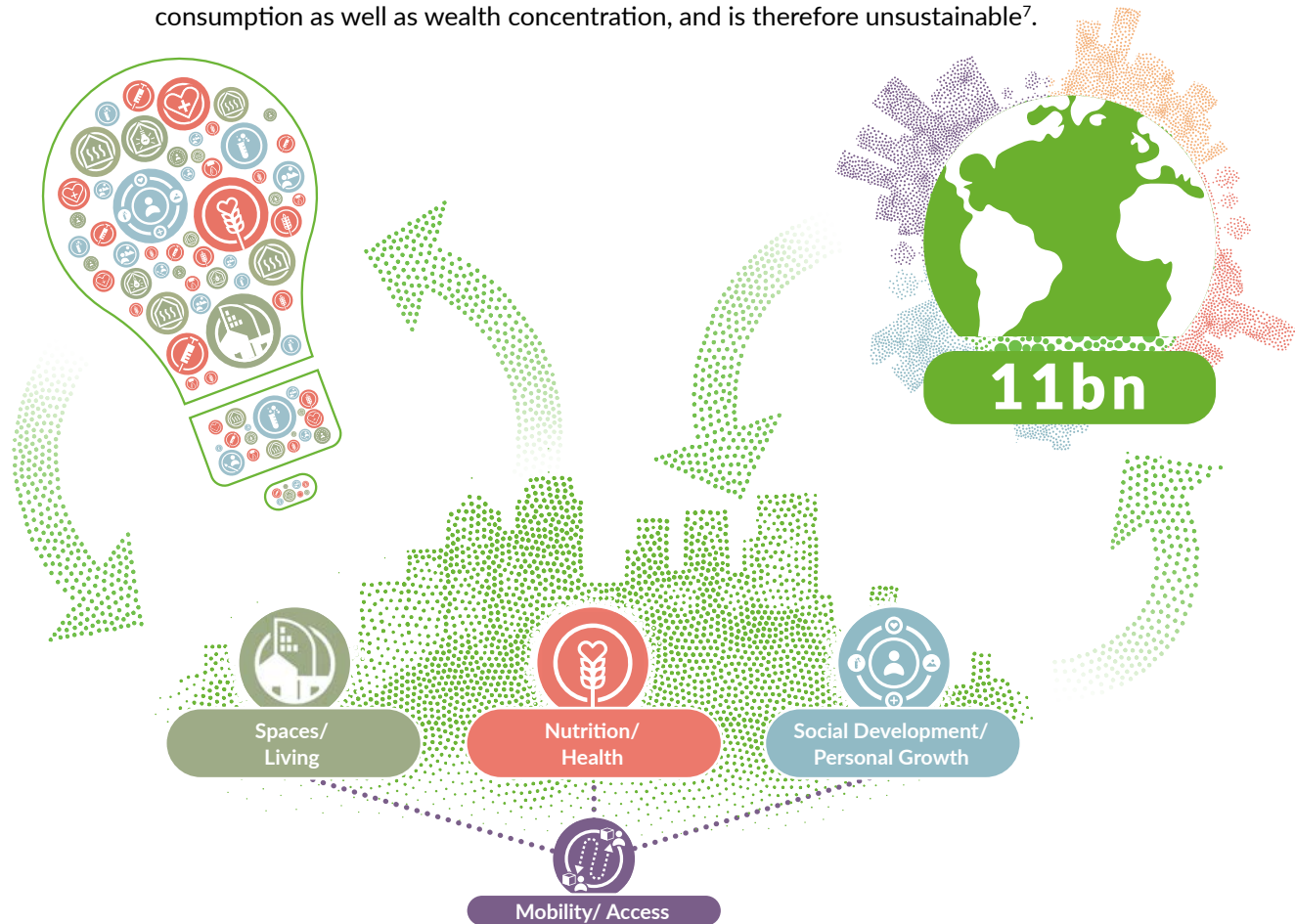
STATIC PROBLEM APPROACH

- Reducing emission from the city to zero
- Emission reductions from existing buildings, vehicles, food, consumption

It is worth noting that many of the current trends are fundamentally unsustainable, e.g. the UN Environment Programme’s Global Resources Outlook 2019 noted that⁸:

- The extraction and processing of materials, fuels and food contribute half of total global greenhouse gas emissions and over 90 per cent of biodiversity loss and water stress
- Resource extraction has more than tripled since 1970, including a fivefold increase in the use of non-metallic minerals and a 45 per cent increase in fossil fuel use
- By 2060, global material use could double to 190 billion tonnes (from 92 billion), while greenhouse gas emissions could increase by 43 per cent

In contrast to a static problem approach, there are a growing number of initiatives with a “dynamic approach”, but without sustainability focus. These initiatives build on the opportunities provided by the fourth industrial revolution, but without an understanding of the deep and fast emissions reductions of greenhouse gases as well as the extreme resource efficiency that are needed for global sustainability. Only accelerating the uptake of disruptive solutions, from AI and IoT to cloud solutions and the use of big data, tend to focus on improvement in existing systems, but accelerate unsustainable resource consumption as well as wealth concentration, and is therefore unsustainable⁷.



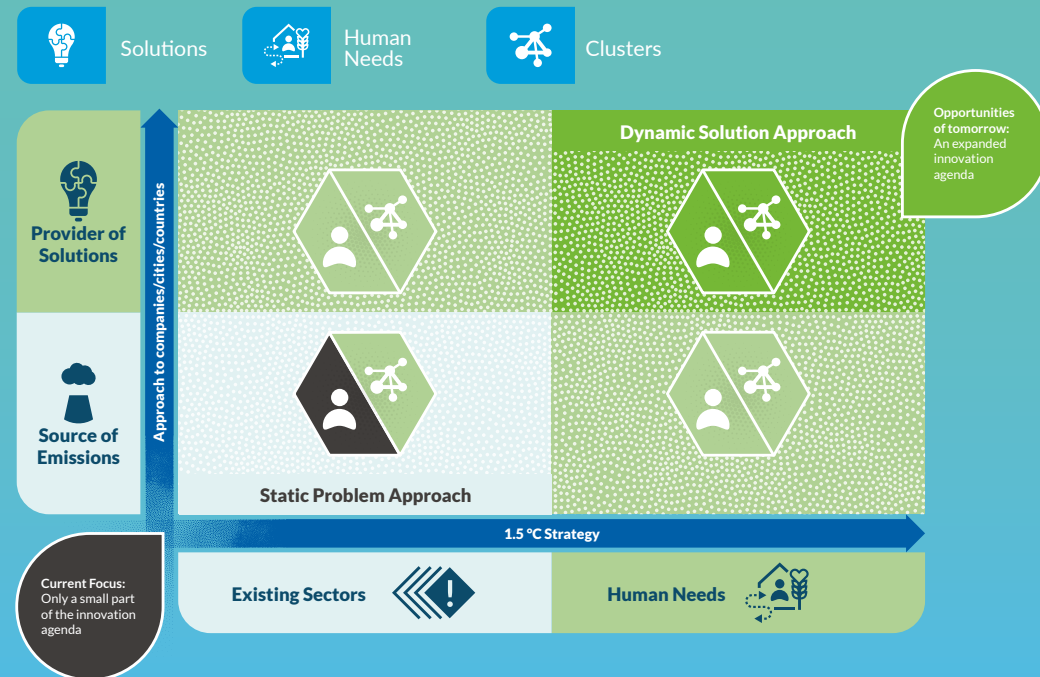
DYNAMIC SOLUTION APPROACH

- Providing solutions for flourishing lives
- Export (and import) of 1.5 °C compatible solutions in global collaboration

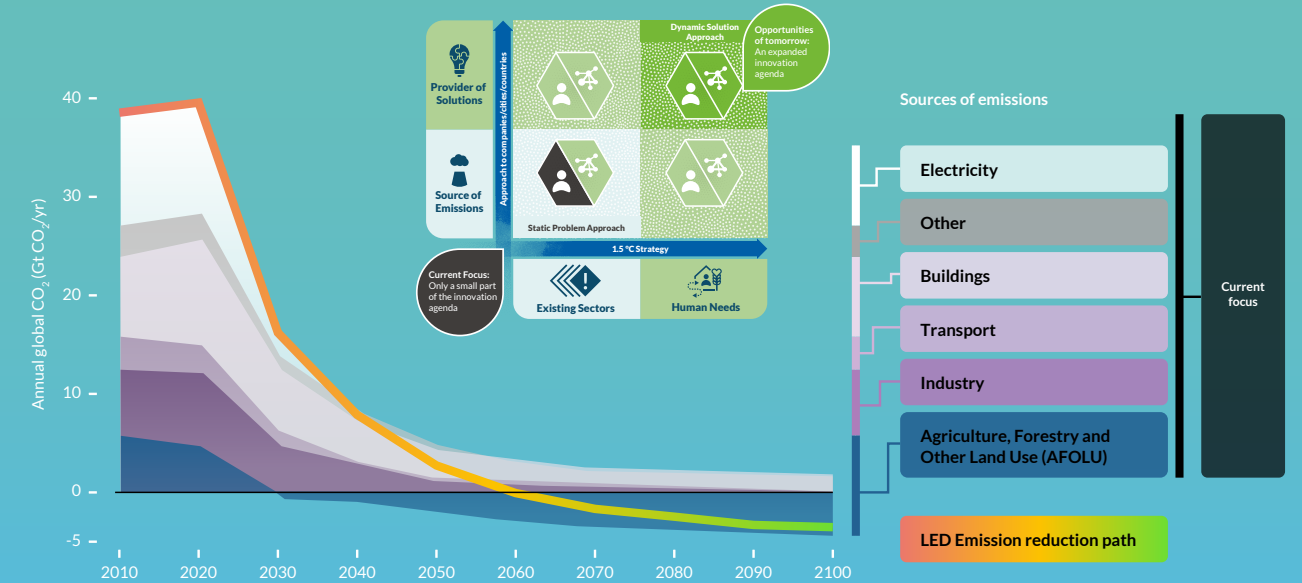
This initiative is based on an expanded innovation agenda with a “dynamic solution approach” based on a need-based climate innovation framework. The initiative is based on the opportunities in the fourth industrial revolution, but also on innovative policies, financial instruments, cooperative approaches, business models, changing values and leadership, and guided by the need

for deep and fast emission reductions in line with IPCCs 1.5 °C Low-Energy Demand Pathway⁹. Such a dynamic and integrated solution approach focuses on how to meet human needs in a way that delivers an equitable future society for >11 billion people through fossil fuel free solutions.

An expanded innovation agenda

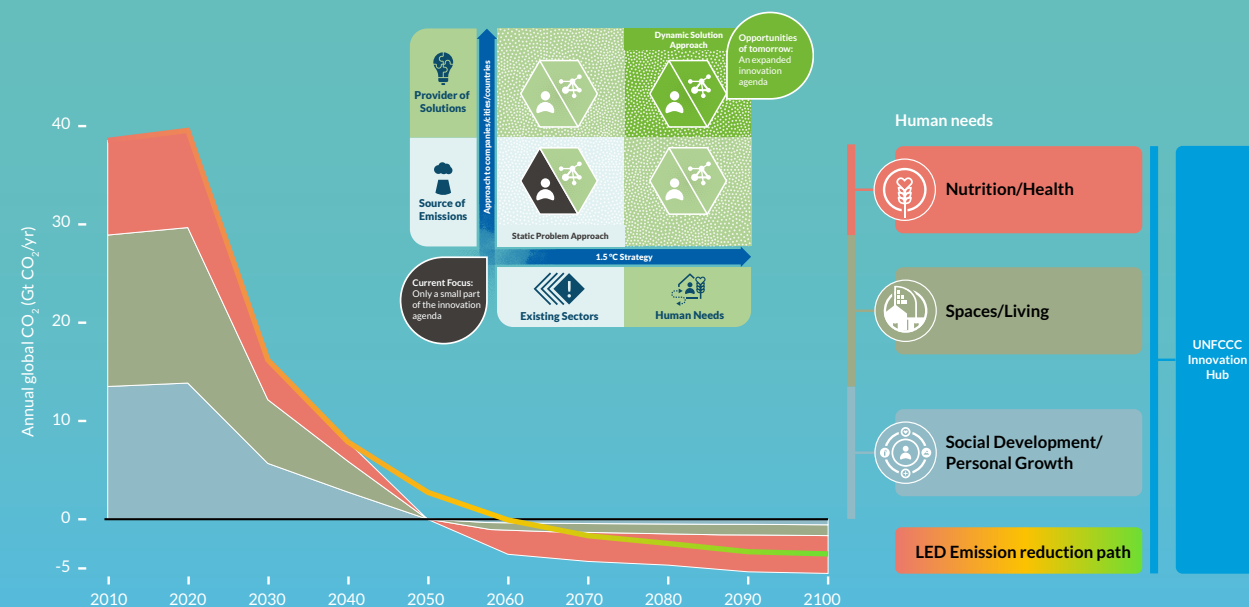


A static problem approach



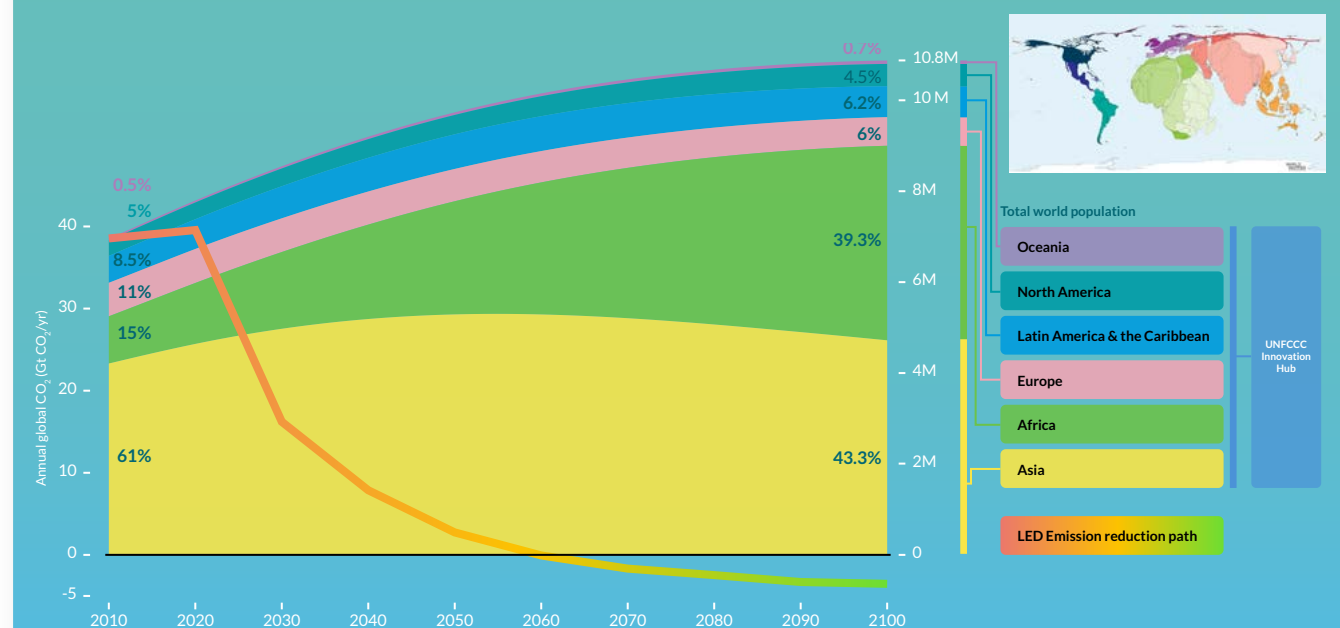
Data Source: IAMC 1.5 °C Scenario Explorer hosted by IIASA

A dynamic solution approach



Data: UN's work with Human Needs and human development[, Max-Neef's Fundamental human needs, Maslow's hierarchy of needs, the Global Footprint Network, Our World In Data, and Carbon Brief

An eleven billion citizen filter for resource efficiency and affordability



Data Source: © August 2019 by United Nations & IAMC 1.5 °C Scenario Explorer hosted by IIASA



A first generation of innovation driven 1.5 °C compatible cities with an expanded innovation agenda

The project will gather an initial group of leading cities (starting with five to eight) that are already exploring, or are interested in exploring, an expanded innovation agenda for a 1.5 °C. The expanded innovation agenda will have four parts:

Technology spending on smart city initiatives worldwide from 2018 to 2023 (in billion U.S. dollars)



Though cities are making increasingly ambitious mitigation and adaptation commitments, fundamental questions remain about how to translate this into action at the scale and speed required... for a sustainable and prosperous future.”¹⁰

1



Launch a call for 1.5 °C compatible climate innovations that address human needs with relevant stakeholders, potentially with support from a digital tool to help the matchmaking between solution providers, enablers and implementers of climate solutions.

2



Identify providers and enablers with the potential to deliver 1.5 °C compatible solutions that are able to meet the needs of the cities

3



Deployment of a curation function to assess the solutions in relation the 1.5 °C compatibility and contribution to an equitable society for 11 billion people living flourishing lives.

4



A strategy to link the accelerated uptake of the solutions in the city to export of such solutions through incubators and other relevant tools.

“Technology spending on smart city initiatives worldwide is forecast to more than double between 2018 and 2023, increasing from 81 billion U.S. dollars in 2018 to 189.5 billion in 2023.”

Source: <https://www.statista.com/statistics/884092/worldwide-spending-smart-city-initiatives/>

UNFCCC, Mission Innovation, The Global Covenant of Mayors, ICLEI, with partners, will work with the group of cities for an expanded innovation agenda and identify processes where a need-based innovation agenda fits, especially how globally sustainable solutions also can become part of the cities export agenda.

A challenge with focus on 1.5 °C compatible solutions with focus on human needs for an equitable world with >11 Billion citizens living flourishing lives

Gather key stakeholders to explore possible solutions and the processes required to:



A

Shift from stakeholders as sources of emissions to also be providers of solutions



B

Shift from a focus on current sectors and structures to the human needs



11bn

C

Include a filter to ensure that the solutions support a future with the possibility to provide flourishing lives for 10 billion by 2050 and >11 billion by 2100

Key questions to consider:

1



What are the possible actions needed to deliver 1.5 °C compatible solutions addressing human core needs in ways that are so resource efficient and affordable that they support a just transition to future with 11 billion living flourishing lives?

2



For each action or category of actions, what are the solutions, processes and tools required for the action to be effective and scalable.

3



Who are the enabling entities that can help identify, implement, finance and scale the solutions?

4



What tools and methods can be used to identify, quantify and assess 1.5 °C compatibility for a sustainable future for 11 billion citizens?



An expanded innovation agenda when cities are seen as solution providers and focus on human needs can turn challenges into opportunities.

Three categories of opportunities with an expanded innovation agenda

1

A positive narrative

With focus on flourishing lives the climate challenge becomes an opportunity to do things better and include everyone

2

Encourages collaboration

With a focus on human needs new clusters, beyond existing sectors and institutions, are encouraged

3

Embraces transformative innovation

With a focus on solutions to human needs totally new solutions and solution providers are encouraged, not just improvement of the old

References

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- 3 <https://www.globalcovenantofmayors.org/>
- 4 <https://iclei.org/>
- 5 <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
- 6 <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
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