

# Using satellite data to help accelerate the green transition

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The ESA Green Transition Information Factory (GTIF) allows users to interactively discover the underlying opportunities and complexities of transitioning to carbon neutrality by 2050 using the power of Earth observation, cloud-computing and cutting edge analytics. Credit: European Space Agency

Earth observation has been essential in identifying and monitoring climate change. Satellite data form the baseline for effective European mitigation and adaptation strategies to support the Green Transition, the European Union to reach its goal of becoming carbon neutral by 2050, as well as its Green Deal.

ESA has now concluded its initial phase of a pilot initiative in Austria

that demonstrates the untapped potential of space technologies by providing actionable Earth observation information to accelerate the Green Transition for both society and the economy.

The climate crisis is the most urgent challenge faced by humankind—affecting every region, continent, and ocean on Earth. It fuels a range of other top-level challenges such as food security, biodiversity loss, risks to human health and economic losses.

With the window of opportunity closing, fast action could still avert the worst damage. To achieve sustainable development and reach carbon neutrality by 2050, international policy reforms are supporting the growth of a responsible, Green Economy, defined as one that is low-carbon, resource efficient, and socially inclusive.

Now is the time to fulfill the full potential of space technology and move from knowledge to action.

In 2021, ESA's Director General Josef Aschbacher introduced the Space for Green Future Accelerator, one of ESA's Accelerators driving Europe's innovation and the use of space to the global climate crisis. The initiative intends to accelerate the Green Transition towards a [carbon-neutral](#), resource-efficient and resilient society.

One of the components of the Space for Green Future Accelerator is the development of the Green Transition Information Factory—an [online platform](#) providing actionable information from Earth observation to accelerate the Green Transition for both society and the economy.

The Green Transition Information Factory is a cloud-based platform, fed by Earth observation and other geospatial data, that allows users to explore the underlying challenges and opportunities of transitioning to carbon neutrality by 2050 utilizing cloud-computing technologies and

cutting-edge analytics.

While the platform's capabilities will be eventually rolled out to all of Europe, the first demonstrator focuses on Austria—a country with a favorable size for national-scale monitoring and very ambitious goals for the Green Transition, including the country's goal to use 100% [renewable energy](#) by 2030.

Patrick Griffiths, technical lead for the platform at ESA, explains, "The richness and variety of Earth observation and other geospatial data, coupled with cloud-computing and modern analytics, enables new perspectives and insights on the complex challenges of the Green Transition.

"The Green Transition Information Factory has been successful in promoting the value of Earth observation and other technologies for addressing the information needs related to the Green Transition. The initiative has successfully engaged various Green Transition actors who typically do not have any interactions with the space domain providing intuitive tools together with rich, interdisciplinary data offers new perspectives to users working in ministries, start-ups and NGOs."

National priorities towards a Green Transition were addressed along the following key domains: energy transition and mobility transition, sustainable cities, carbon accounting and Earth observation adaptation services.

As an example, decision-makers in the energy sector can assess the suitability of different areas for expanding wind or solar power installations considering constraining factors, such as distance to settlements or the presence of protected areas. Users can interactively investigate related trade-offs with, for example, other land uses or soil quality.

This is just one example of how the platform enables decision-makers to assess and monitor the effectiveness of its policies and evaluate outcomes using its data, it allows industry to develop novel solutions to foster the Green Economy and allows citizens to engage and understand their actions through interactive exploration tools across key Green Transition domains.

Gebhard Banko, from the Environment Agency Austria, commented, "The Green Transition Information Factory will support a better understanding of constraints and dependencies between different policy goals in a spatial explicit manner."

"As policy decisions are affecting different administrative levels and thematic domains, the tool will support bridging the gap between the various stakeholders, enrich our communication tools, and contribute to improved decision making relying on evidence-based measurements and models. A continuous integration of nature conservation datasets into the platform is necessary to improve the assessment of trade-offs between energy transition and biodiversity."

The Austrian government, through the Austrian Federal Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK), have early on expressed a key interest in the initiative. Additional requirements to further evolve the Green Transition Information Factory were brought forward to meet the specific needs of Austria and discussions on how this can be facilitated are ongoing.

Leonore Gewessler, the Austrian Minister for Climate Action, comments, "The Green Transition Information Factory demonstrates the added value of the European Earth observation system (Copernicus) for the transition in the energy and mobility fields as well as with regard to sustainable cities. If [decision-makers](#) or the public want to know where

the best place is for wind of PV systems, this great tool which has been developed by ESA in cooperation with Austrian space companies, makes it easy to locate them."

The overall ambition for ESA's Green Transition Information Factory is to enable such analyzes and comparison across countries and regions for all of Europe. As a next step, an invitation to tender is being prepared that will expand the initiative and define a blueprint for scaling up the geographic coverage of the platform.

ESA's Director General Josef Aschbacher said, "We are sitting on a gold mine of Earth observation data, during the golden age of space data. We need to unlock this for all sectors and actors that are trying to reach net-zero. ESA and its Member States will continue investing in future technology, missions, research, science and applications, to enable reaching such ambitious objectives."

"The Space for a Green Future Accelerator, led by ESA, will spur the uptake and use of space solutions to give much greater momentum to the [green economy](#) and will be one of the key ambitions that ESA will table at the 2023 European Space Summit in Seville, Spain."

Provided by European Space Agency

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