



Regions Take Action:

Innovative Industry

With a clean energy supply, industry can move to electric power while also creating solutions to drive a clean energy economy. This includes new processes, low-carbon-materials, digital technologies, and more.





Innovative Industry

Industry and industrial practices march forward constantly, forever advancing and innovating. Policies that support innovation in industry and manufacturing on a regional scale can provide widespread benefits, including job creation and retention, economic competitiveness, climate resilience, health, and equity benefits through the inclusion of marginalized or disadvantaged groups.

System-wide, comprehensive approaches to transform the industrial sector are gaining traction. As digital technologies and renewable energy have grown more rapidly, so have the available opportunities.

System-wide transformation also is helping to maintain regional competitiveness. For example, the creation of a circular economy to increase productivity and reduce waste is increasingly feasible through the use of digital communication and logistics technologies.

Industry innovation can include, for example, building low-carbon eco-industrial parks, increasing energy efficiency in the transport of goods, and producing low-carbon materials for construction and manufacturing. Comprehensive policies that revolutionize multiple aspects of industry—energy use, waste, transport, information, materials, and more—have the potential to create true transformation by taking advantage of synergies between these pieces of the supply chain. Repurposing waste, for example, may reduce the need for both raw material inputs and transport.

Direct emissions from industry represent more than 20% of global GHG emissions,¹ and total emissions in the sector, when electricity use and heavy transport are included, are much higher. The sector is therefore critical to achieving decarbonization goals. Within industry, policies should work to address large sources of emissions that are generally not sharply reduced in the absence of policy intervention, such as iron, steel, and cement production. Due to industry's systemic nature, these innovations have the potential to provide profound economic, social, and environmental benefits.

¹ EPA (United States Environmental Protection Agency). 2019. "Global Greenhouse Gas Emissions Data." September 13, 2019. <https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data>.






Leadership in Action

Hauts-de-France: France's rev3 Initiative

Hauts-de-France, a region in northern France's industrial heartland, faces economic challenges related to the decline in manufacturing and the resulting loss of jobs.

Working to jump-start the region's economy, leaders in Hauts-de-France have recently undertaken a new, forward-looking approach—rev3—to pursue what they refer to as the "Third Industrial Revolution," a new economic era resting on digital technologies, renewable energy, and low-carbon materials. This work stems from the recognition by Hauts-de-France leaders that the economy of the future is carbon neutral and that industry will benefit greatly by leading the way toward decarbonization.

Rev3 positions Hauts-de-France to take advantage of the massive economic opportunities of the Third Industrial Revolution and become one of the world's leading manufacturing economies. It will accomplish this goal by using new technologies to repurpose and reinvent existing systems, making the region's economy sustainable, resource efficient, and productive. The initiative includes five interlocking pillars: distributed renewable energy, sustainable buildings, energy storage, internet technologies, and mobility. Funding is provided to projects that advance the policy's goal, with more than 700 projects now underway as part of rev3.

Key Milestones

Author/advisor introduces new economic vision

Jeremy Rifkin visits Hauts-de-France, highlighting the idea of the Third Industrial Revolution and the opportunity that it represents for the region.

Plan receives official government support

The Chamber of Commerce and Industry organizes a series of stakeholder workshops regarding the Third Industrial Revolution.

Experts draft economic roadmap

The Third Industrial Revolution Master Plan² provides the government with a blueprint for future policy, formally outlining a path forward.



Driving Forces

A number of factors led Hauts-de-France to enact the rev3 policy, including:

Economic risk and opportunity.

Hauts-de-France faced economic challenges as factories moved out of the region, coal mining ceased, and jobs diminished. Leaders there began to view a solution like rev3 as an opportunity to build long-term economic strength in the region.

Individual leadership.

Author and political advisor Jeremy Rifkin introduced the concept of the Third Industrial Revolution to Hauts-de-France in 2012. He helped craft the vision for rev3 and prompted the Hauts-de-France government to create rev3 as an institutionalized program.

Historical perspective.

Hauts-de-France had been a leader in the First Industrial Revolution but had been less economically successful during the Second. Knowing what happened in Hauts-de-France when it experienced both the highs and lows of these historical periods made Hauts-de-France leaders determined to harness the power of the Third Industrial Revolution and not be left behind.

Rev3 expands to cover all of Hauts-de-France

French Territorial Reform³ creates the Hauts-de-France region by merging the regions of Nord-Pas-de-Calais and Picardy, and rev3 expands to cover all of the new territory.



Rev3 implements funding mechanisms

Rev3 implements a variety of funding mechanisms, such as grants and equity investing through the CAP 3RI fund, a citizen-funded rev3 savings account, and crowdfunding sources to provide support for qualifying projects.

Throughout this process, rev3 has focused primarily on creating innovative financing tools to support independent projects that work toward the rev3 vision. This funding ecosystem now includes over 40 public financial stakeholders (e.g., European, national,

and local agencies) and private financial stakeholders (e.g., banks, shared equity funders). These institutions offer a variety of project options, including grants, capital investment, and loans.⁴

2 TIR Consulting Group. 2013. Nord-Pas de Calais: Third Industrial Revolution Master Plan–2013. <https://en.calameo.com/ci-hauts-de-france/read/0028209601062e1413c26>

3 Government of France. 2014. "Territorial Reform." November 21, 2014. <https://www.gouvernement.fr/en/territorial-reform>

4 CCI Hauts-de-France. 2016. La Vie rev3 des Hauts-de-France. https://rev3.fr/wp-content/uploads/sites/7/2017/10/LA-VIE-REV3-DES-HDF_pages.pdf

Keys to Success

The rev3 initiative has seen mounting success as a result of the following factors:



Forward-thinking vision

Jump-starts the region's economy by working on the greatest areas of advancement and opportunity, such as distributed energy generation and energy storage, rather than remaining static and focusing on outdated practices. Taking a strategic approach toward embracing change positions the region as an economic leader.

Holistic approach

Works to engage multiple sectors, in addition to industry, in the region's economic transition. This work includes, for example, modernizing the mobility sector so that manufactured goods can be moved efficiently, as well as working with universities to undertake research and provide vocational training.

Supporting local priorities

Tailors solutions specifically to the region's local needs. This is possible because of a flexible structure that allows the region's five departments and its urban municipalities to independently drive progress toward the rev3 goal—rather than all solutions being implemented by the regional government.

Funding mechanisms

Offers a variety of funding options (e.g., regional government, European Union, and equity funds) to directly support projects that advance rev3 goals.

Capacity building

Provides support through networking, advice, and training resources in addition to helping to fund participating projects. This integrative approach is valuable because many projects do not need rev3 funding to succeed but are interested in other types of support.

Positive and inclusive messaging

Builds support by emphasizing that everyone in the region is invited to participate. Its message focuses on opportunity, progress, and the bright future that rev3's success will bring, as well as the benefits to projects that participate (e.g., financial and advisory support). This message also helps build a shared regional identity for Hauts-de-France, which was created in 2016.



Benefits

The rev3 initiative aims to revolutionize the Hauts-de-France economy by combining job creation, economic development, and climate change mitigation. The policy's benefits are interconnected, with comprehensive economic development resting on and enhanced by inclusion, for example.

Economic Development

Job creation. Rev3 is predicted to create 160,000 jobs by 2050. In a region that has long faced economic decline, rev3 provides transition opportunities, particularly for workers in declining sectors of the economy. Job creation will occur through the policy's support of new projects, new industries, and new approaches to existing problems.

Job preservation. Rev3 creates a supportive environment that encourages existing companies to remain in the region, helping prevent manufacturing plants from closing and jobs from moving overseas. This includes supporting existing companies that are undertaking innovative projects as well as growing the talent pool for these companies through education and training programs.

Economic competitiveness. Rev3 helps position Hauts-de-France as a global leader in sustainable manufacturing, attracting and retaining companies while pioneering new approaches in industry. The policy enhances region-wide economic competitiveness in the face of challenges such as globalization.

Health

Air quality. Modernizing and decarbonizing industry will transform Hauts-de-France's polluting industries, improve air quality, and lower related health impacts. Hauts-de-France has the worst air quality in France, with about 6,500 premature deaths annually caused by pollution (Frédéric Marquet, interview by Seth Coan and Jake Glassman, July 29, 2020).

Equity

Inclusion. Rev3 aims to include everyone in Hauts-de-France in the region's economic transition, including industry, finance, academic, governmental, and civil society stakeholders. It also focuses substantially on those that are marginalized or have faced economic hardship, such as workers left behind by the disappearance of the region's once-thriving coal mining industry. Engaging citizens can improve their quality of life by providing new opportunities for income or training for new types of employment.

Environmental justice. Since industrial pollution disproportionately affects vulnerable communities, cleaner processes and less fossil fuel use directly support greater quality of life.

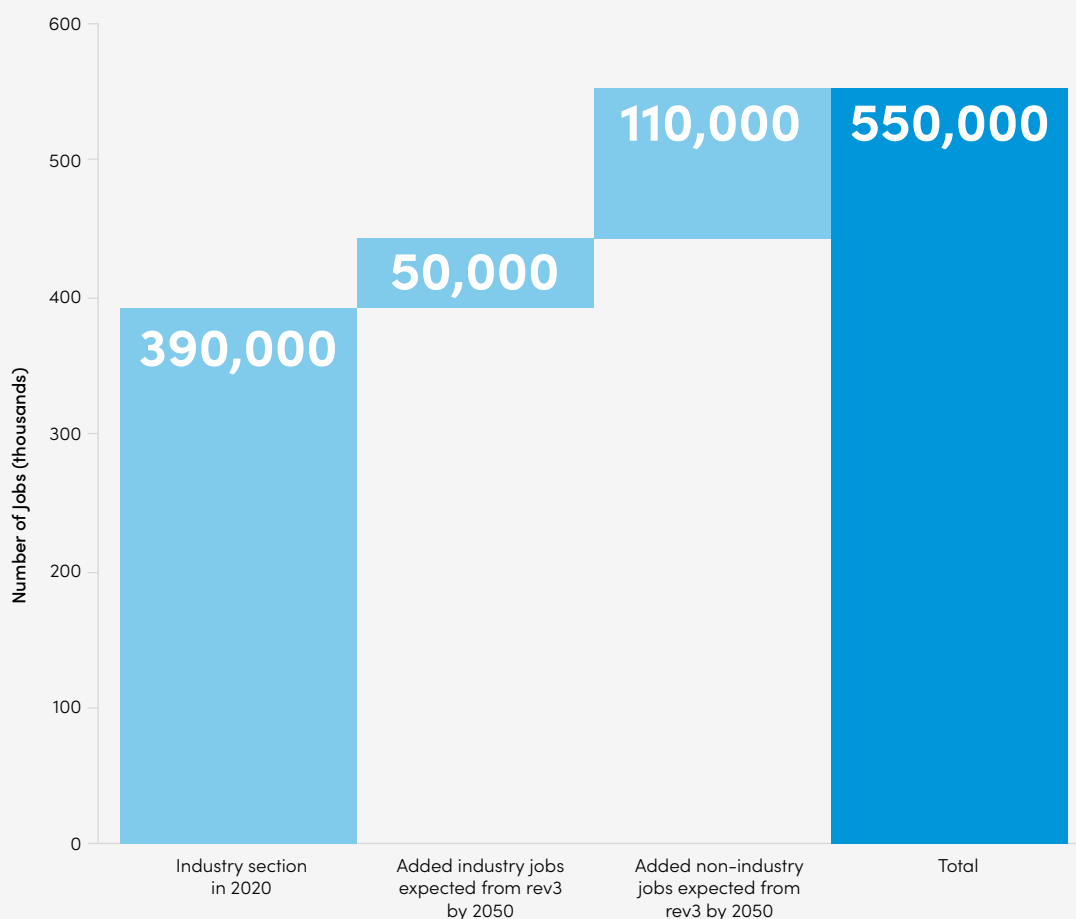
Resilience and Security

Economic resilience. Strengthening the region's economy will provide resilience against economic stressors. This is particularly important during economic downturns, such as the one caused by the COVID-19 pandemic. Technological innovation will help insulate Hauts-de-France from the economic decline of carbon-intensive industries.

Climate resilience. Pursuing the development of renewable energy, smart grids, and energy storage will lower GHG emissions, which helps prevent extreme weather risks. It will also enhance climate resilience in the region by providing power when extreme weather affects the grid. Hauts-de-France is a coastal region with numerous important ports, and sea level rise poses a significant threat as well.

Low-carbon industry creates jobs.

Expected Job Creation over Time from rev3¹



Rev3 Resources

- [Hauts-de-France: A smart, sustainable, and connected region²](#)
- [La Vie rev3 des Hauts-de-France²](#)
- [Third Industrial Revolution Master Plan³](#)

¹ Hauts-de-France employment in industry and construction based on data from France's National Institute of Statistics and Economic Studies. Addition of new jobs from rev3 based on (1) total expected job additions of 160,000 by 2050 from The Climate Group (Partner region profile – Hauts-de-France) and (2) the Third Industrial Revolution Master Plan's likely distribution of net job gains across sectors (p. 81). In the latter document, industry jobs are understood to be represented by construction (9%), manufacturing and agriculture (15%), and transportation and logistics (7%). Thus, $(160,000) \times [(9\%) + (15\%) + (7\%)] = 50,000$, and $160,000 - 50,000 = 110,000$.

² Enterprise Europe Network, CCI International Picardie, Region Hauts-de-France, and CCI International Nord de France. 2016. *Hauts-de-France: A Smart, Sustainable and Connected Region*. <https://www.3dnetzwerk.com/wp-content/uploads/2016/12/Introducing-REV3-in-Hauts-de-France.pdf>.



Broader View

Transforming the industrial sector is useful throughout the globe but is most relevant in regions containing a prominent manufacturing sector, facing economic hardship, or benefiting from particular industrial opportunities. Regions without significant manufacturing capacity can address the sector indirectly by focusing instead on the demand side (e.g., procuring particular products or materials that are not manufactured within the policy's jurisdiction).

Rev3 is a public-private collaboration that provides funding opportunities for projects that advance its goals. There are other similar structures, such as IN4climate.NRW,³ a platform for stakeholders to work toward a carbon-neutral industrial sector in the German state of North Rhine-Westphalia. Other states pursue more targeted projects. For example, the Net Zero Plan for New South Wales, Australia, includes a few singular industry initiatives, such as the Emissions Intensity Reduction Program, which funds carbon capture, fuel switching, and energy efficiency measures in industry.⁴

In addition to presenting great opportunities, the industrial sector also contains some of the more difficult decarbonization challenges in our economy. Policymakers should take particular care regarding “harder to abate” emissions, which include those

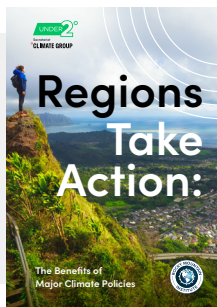
from materials such as steel, cement, plastic, and aluminum. Because these are sizable industries, addressing their emissions is challenging, but the rewards are great. For example, incentivizing the production of low-carbon cement can benefit air quality and health while creating jobs.⁵

Policymakers will do well to take advantage of the widespread opportunities in the industrial sector. While both comprehensive and narrowly focused approaches are valuable, whole-system approaches seem to provide the greatest potential for overall benefits. Whole-system approaches, addressing all major components of a region's industrial sector, create synergies among solutions that can bring about the most cost-effective and lasting economic, environmental, and social benefits.

³ Ministry of Economic Affairs, Innovation, Digitization and Energy of the State of North Rhine-Westphalia. n.d. “IN4climate.NRW.” Accessed July 27, 2020. <https://www.in4climate.nrw/en/index/>.

⁴ New South Wales Government. 2020. *Net Zero Plan Stage 1: 2020–2030*. <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Climate-change/net-zero-plan-2020-2030-200057.pdf>.

⁵ Kerlin, Kat. 2020. “Concrete Solutions That Lower Both Air Emissions and Air Pollution.” *UC Davis News*, March 23, 2020. <https://www.ucdavis.edu/news/concrete-solutions-lower-both-emissions-and-air-pollution>.



These pages are excerpts from **Regions Take Action: The Many Benefits of Major Climate Policies**. This action is one of five featured actions which may be relevant to others in your region. Download and share the full guide for free at under2coalition.org/news/regions-take-action or rmi.org/regions-take-action.



About Rocky Mountain Institute

Rocky Mountain Institute (RMI)—an independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the

adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables. RMI has offices in Basalt and Boulder, Colorado; New York City; the San Francisco Bay Area; Washington, D.C.; and Beijing.



This guide was produced in partnership with the Under2 Coalition and The Climate Group.

About the Under2 Coalition and the Climate Group

The Under2 Coalition is driven by a group of ambitious state and regional governments committed to keeping global temperature rises to under 2°C. The coalition comprises more than 200 governments that represent over 1.3 billion people and nearly 40% of the global economy.

The Climate Group is the Secretariat to the Under2 Coalition and works with governments to accelerate climate action through three work streams: planning deep decarbonization pathways, scaling innovative policy solutions, and mainstreaming transparency and reporting.

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