



NORD-PAS DE CALAIS
LA TROISIÈME RÉVOLUTION
INDUSTRIELLE EST EN MARCHÉ

L'ÉNERGIE RENOUVELÉE
DU NORD-PAS DE CALAIS

LA TROISIÈME RÉVOLUTION INDUSTRIELLE EN NORD-PAS DE CALAIS
SYNTHÈSE RÉALISÉE
À PARTIR DU MASTER PLAN DE JEREMY RIFKIN



INSPIRED BY THE WORK OF U.S. ECONOMIST JEREMY RIFKIN, THE NORTHERN REGION HAS EMBRACED THE THIRD INDUSTRIAL REVOLUTION(3IR) .

THE AIM IS SIMPLE : BECOME ONE OF THE WORLD'S MOST EFFICIENT AND PRODUCTIVE LOW-CARBON ECONOMIES BY 2050.

THE E-GREEN ECONOMY MODEL BUILT ON THE CROSSROADS OF DIGITAL AND RENEWABLE ENERGIES OFFERS A DOUBLE BONUS FOR INVESTORS : LOWER CARBON EMISSIONS AND HIGHER RETURN ON INVESTMENT (ROI)

THE THREATS OF CARBON, ITS STALEMATES

A CONTEXT AND CONSENSUS PROPITIOUS FOR LAUNCHING THE
NEW ECONOMIC MODEL

A JOINT ACTION : THE NORTHERN REGION, WITH J. RIFKIN, IS
MAKING THE THIRD INDUSTRIAL REVOLUTION

A BEACON THAT HERALDS THE MODEL FOR THE ECONOMY AND
PROSPERITY OF TOMORROW

IMPLICATE INVESTORS IN THE OPPORTUNITIES CREATED BY THE
THIRD INDUSTRIAL REVOLUTION IN THE NORTHERN REGION

THE THREATS OF CARBON, ITS STALEMATES

OUR ECONOMIC MODEL BUILT ON FOSSIL ENERGIES IS A SETTING SUN

RISKS OF DEPRECIATION OF ASSETS TIED TO FOSSIL ENERGIES

The Carbon bubble : the true costs of carbon dioxide in intensifying climate change are not taken into account in a company's stock market valuation

Energy requirements are soaring : China will hit peak thermal coal demand by 2016

The scarcity of fossil resources provoking an **never ending increase of prices**

An unavoidable **truth in carbon pricing** by taking into account :

- Coming green taxes
- The meltdown/phasing out of current subsidies : according to the OECD, the ratio today is one to four between clean energies and fossil fuels
- The emission trading : reducing of allowances

The fiduciary duty and responsibility of the assets managers is being put on the line, carbon footprints of investment portfolios are on an upswing

THE THREATS OF CARBON, ITS STALEMATES

OUR ECONOMIC MODEL BUILT ON FOSSIL ENERGIES IS A SETTING SUN

REPUTATION AND BRAND RISKS ARE INCREASING

A rise of environmental, social and governance(**ESG**) concerns, *affectio societatis* need of investors, consumers and savers (**demand of traceability**)

The increase of corporate social responsibility(**CSR**), socially responsible investment (**SRI**), best-in-class approach and thematic funds :

- Compulsory SRI mandates for institutional investors
- SRI market(FR) multiplied by forty between 2003 and 2013 going from €3,9 MDS to €169,7 MDS

Success of green bonds : €2.5MD GDF SUEZ emission in 2014, Air Liquid, EDF, IDF Region

Divest Campaign : Stanford, Rockefeller Brothers Fund, « vote with the feet »

**The risks of not being in step with emerging social values and standards.
Short-term vision reproach is weighing on investors.**

A « BUSINESS AS USUAL » SCENARIO IS BECOMING NO LONGER SUSTAINABLE AND IT IS A DEAD-END DIRECTION



« The entire industrial infrastructure built off fossil fuels is aging and in disrepair. It is becoming increasingly clear that the Second Industrial Revolution is dying and that we need a bold new economic narrative that can take us into a more equitable and sustainable future. »

Jeremy Rifkin

A CONTEXT AND CONSENSUS PROPITIOUS FOR LAUNCHING THE NEW ECONOMIC MODEL

A COMMON/MAINSTREAM AIM TO CURB THE CARBON FOOTPRINT AND POLLUTION

Strategies orientations towards a Post Oil Era

COP21 2015 Paris : a new climate treaty ; European Union(EU) policy " Europe 2020" oriented towards " sustainable, smart and inclusive growth"

Implementing sustainable growth : becoming a public priority and commitment

- Green New Deal(Korea) ; Energiewende (Germany) ; law on energetic transition (France)

UNEP Finance Initiative(UNEP FI), Principles for responsible investment(PRI) launched by United Nations and Kofi Annan ; Principles for Sustainable Insurance(PSI)

Economic, legal and political conditions are in line with this shifting paradigm

A CONTEXT AND CONSENSUS PROPITIOUS FOR LAUNCHING THE NEW ECONOMIC MODEL

THE DAWN OF A SWEEPING TECHNOLOGICAL CHANGE

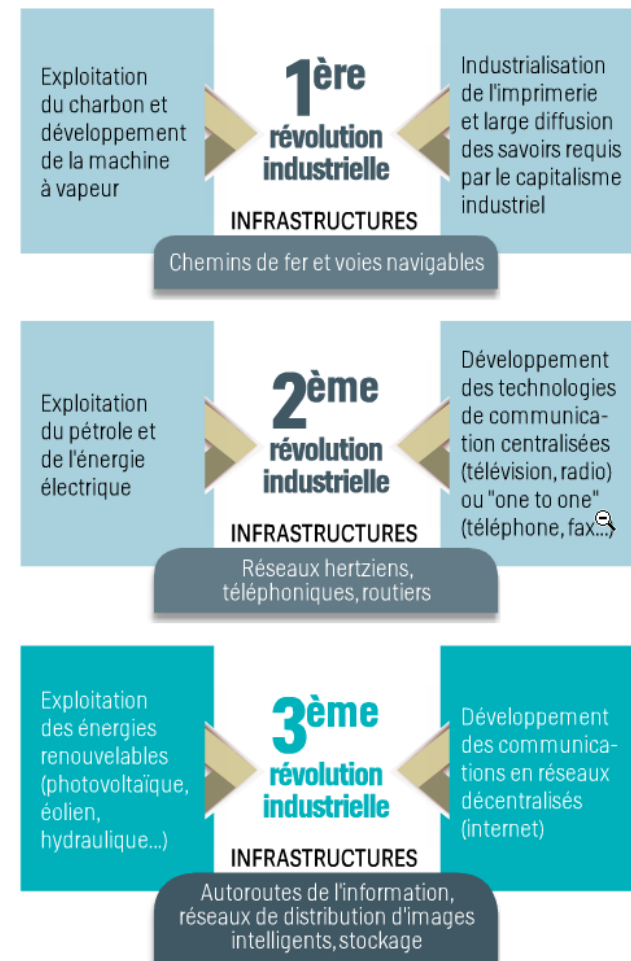
Internet, new technologies in information and communication (NTIC) and smart grids

The maturity of batteries, increased storage capacities

Thereby renewable energies becoming robust and on the tipping point of outdated fossil energies

Their merger gives birth to the energy Internet, innovative and high added value pathways, newer high investment return niches

E-GREEN ECONOMY : LOWER EMISSIONS, HIGHER ROI



A CONTEXT AND CONSENSUS PROPITIOUS FOR LAUNCHING THE NEW ECONOMIC MODEL LOW CARBON, CLIMATE RESILIENT AND HIGHLY COMPETITIVE ECONOMY : WE HAVE TURNED THE CORNER

Collaborative intelligence enhanced by smart grids and Big Data

Streamlining work flow capabilities and logistics

A more efficient organization by algorithmic regulation which capitalizes on big data

A shift towards new business models based on individual needs and usage : functional economy

Up until now, there are only promising initiatives which are suffering from tunnel vision and are lacking in scope. Sector-specific approaches without a master plan.

The need for the lighthouse project which would be at the cutting edge of the technological and energetic changes of the future

A SHARED DIAGNOSIS FOR JOINT ACTION

PUTTING IN PLACE RIGHT NOW THE MODEL OF TOMORROW

Philippe Vasseur

President of the Chamber of Commerce and Industry for Northern France

Jeremy Rifkin

Author of *The Third Industrial Revolution: How Lateral Power Is Transforming Energy, the Economy, and the World* ; *The Zero Marginal Cost Society*

Daniel Percheron

Senator
President of the Regional Council of Nord-Pas de Calais, France



Decision-makers and leaders endowed with vision : an audacious and concrete project which restores belief in progress and paves the way for an economic and environmental renewal

A JOINT ACTION : THE NORTHERN REGION, WITH J. RIFKIN, IS MAKING THE THIRD INDUSTRIAL REVOLUTION

THE MOMENTUM OF AN ENTIRE REGION MOBILIZING TOWARDS HIGH COMPETITIVE AND LOW CARBON GROWTH : THE E-GREEN ECONOMY

Over 200 projects already underway
Thermal-renovating of 100,000 buildings
Carbon free Campus program

Business Club(networking, sharing best practices)
Task force of 3RI advisors
A Funding hub
Four crowdfunding platforms
Dedicated savings passbook

Five capitals in less than three hours by TGV
France's second national university cluster
France's second numerical hub
First french region in exportations, in agro-biotech and nutrition
Three major seaports



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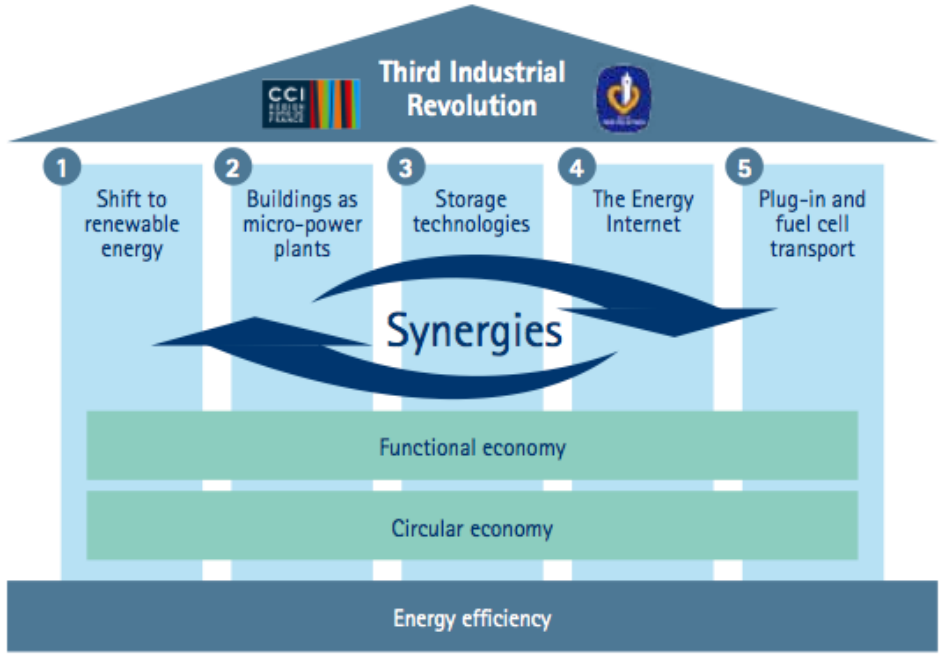
THE SHIFT FROM THEORY TO PRACTICE

A PIONEERING APPROACH AS INNOVATIVE AS IT WIDE IN SCOPE

The Master Plan

Five pillars and three transversal and active principles

Highlighting energy efficiency of buildings, industry and transport



Mobilizing stakeholders with an understandable, smart and concrete roadmap with which the economy will continue picking up

A JOINT ACTION : THE NORTHERN REGION, WITH J. RIFKIN, IS MAKING THE THIRD INDUSTRIAL REVOLUTION TO A BIOSPHERE VALLEY AND A NEW TECHNOLOGICAL PLATFORM

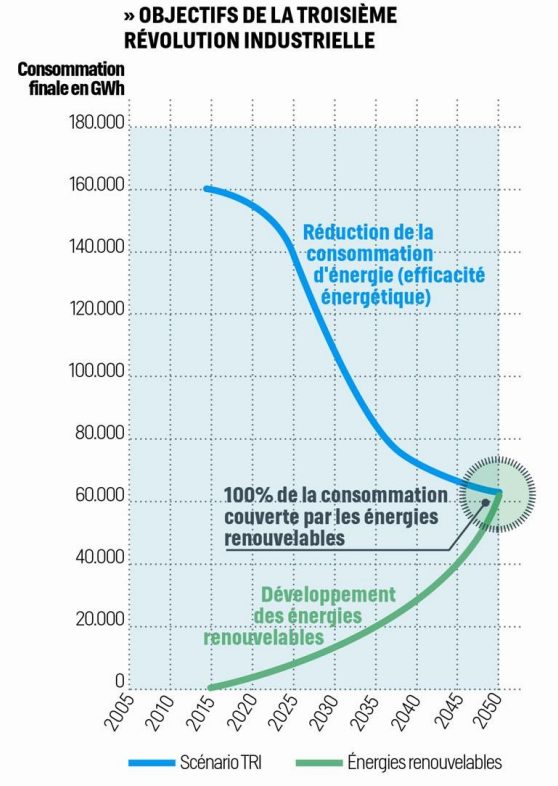
AN INCUBATOR AND HOTHOUSE OF EXCEPTIONAL AND INNOVATIVE TECHNOLOGIES

Lille "Euratechnologies" virtual science hub

State of the art clusters ; tech-savvy regional Lab

The region houses 7 clusters and 14 centers of expertise, specializing in research and development on the following topics : materials and textiles; materials for sustainable use; aquatic products; trade industry; land transports; nutrition, health longevity; and waste recovery

An economic cluster strategically situated between Paris, London, Bruxelles



A powerful region endowed with high spill over effect on its european neighbours and the continental economy : annual GDP 100 billion euros, ten million inhabitants, 10% current exports

A JOINT ACTION : THE NORTHERN REGION, WITH J. RIFKIN, IS MAKING THE THIRD INDUSTRIAL REVOLUTION

**A NEW WINDOW OF OPPORTUNITIES IS BEING OPENED BY A CITIZEN-
CORPORATE COLLABORATION IN THE THIRD INDUSTRIAL REVOLUTION**

Bringing together the driving forces of the region : citizens, entreprises, associations and universities

Grass roots initiatives and lateral power to smooth the decision making and emancipating the power brokers. Abundance of initiatives, harvesting ideas and projects, sharing best practices

A new student and citizen association dedicated to the 3RI whose aims are : to promote the 3RI, to forge links between corporations, institutions and students, to boost employment in new jobs linked to the 3RI and the e-green economy, raise public awareness to eco-friendly behavior.

To gathers students from the top schools, and different career paths.

In less than a year more than 200 ongoing projects enriching business club meetings and the emergence of new industrial clusters

A BEACON THAT HERALDS THE MODEL FOR THE ECONOMY AND PROSPERITY OF TOMORROW

THE NORTHERN REGION DOES IT AND SHOWS IT

WIDESPREAD MEDIA COVERAGE

A region under the international spotlight

The Trophy for best communicator in 2013 awarded to Mr Vasseur

Coverage by regional, national, international medias

More than 10,000 Master Plan summarizes distributed

DARING AND ATTRACTIVE PROJECT

Requests, lobbying, solicitations from everywhere and talent which by joining, bring their skills and reinforce the project

A BEACON THAT HERALDS THE MODEL FOR THE ECONOMY AND PROSPERITY OF TOMORROW

TOWARDS AN IMPROVED TECHNOLOGICAL, INDUSTRIAL AND ENVIRONMENTAL PERFORMANCE

A network of startups skilled in the convergence of new tech and renewable energies : innovation, applied fundamental research, creativity, collaborative intelligence

Cutting-edge and groundbreaking research laboratories which streamline production and best practices

A rehaul of the educational process in order to be in step with the new employer-industry training skills required in a post carbon economy.
New jobs with high technical and social values

Moving away from the linear model lifestyle (« take, make, dispose ») to a circular economy « reduce, reuse, recycle »

Re-shaping the energetic model by moving towards near-zero marginal cost energy



Departmental archives of Lille

NEW SYNERGIES AT THE CROSSROADS OF DIGITAL ECONOMY, RENEWABLE ENERGIES AND EFFICIENCY

Ecodistricts, building as micro-Power Plants (positive energy), low carbon mobility and multimodal transport, battery powered cars, co-op transport, short circuits

Eco materials, recycling, bio-based chemistry, hydrogen, power to gas, biofuels, offshore wind farms, biomass, heat pumps, smart meters, tidal power stations

Robotics, electronics, mechanics, wireless devices, smart and connected objects, sensors, power grids, compressed air

3-D printer, cloud computing, open and big data, nanotechnologies, drones, fablabs

ACTING ON CLIMATE CHANGE IS NOT THE FOE OF GROWTH, QUITE THE OPPOSITE

CLIMATE CHANGE, WATER SCARCITY, FLOODING, POLLUTION AND DEFORESTATION PRESENT MATERIAL RISKS AND OPPORTUNITIES FOR INVESTORS

These threats jeopardize the investment and **retirement savings of millions of citizens**

In order to protect their **long term investments** and abide by **their fiduciary duty**, institutional investors must act to reduce the long-term risks

Forerunner macro trends : renewable energies like solar, wind and biomass are now at the edge of being competitive

The Third Industrial Revolution in the Northern Region offers large scale low carbon and climate resilient investments which will meet return objectives

ACTING ON CLIMATE CHANGE IS NOT THE FOE OF GROWTH, QUITE THE OPPOSITE

ECONOMIC GROWTH AND ACTION ON CLIMATE CHANGE CAN NOW BE ACHIEVED TOGETHER

« The idea that we must choose between fighting climate change or growing the world's economy is a false dilemma,[...] technological change is driving new opportunities to improve growth, create jobs, boost company profits and spur economic development. We can improve the economy and tackle climate change at the same time. »

Felipe Calderón, Former President of Mexico
Chair of the global commission on the economy and climate

HOW SOLAR, BATTERIES AND ELECTRIC CARS WILL RE-SHAPE THE USE OF ELECTRICITY

« Batteries and solar at the tipping point : Electricity users will become generators »

« Big power stations could be redundant within 10 20 years as electric cars, cheaper batteries and new solar technologies transform the way electricity is generated, stored and distributed »

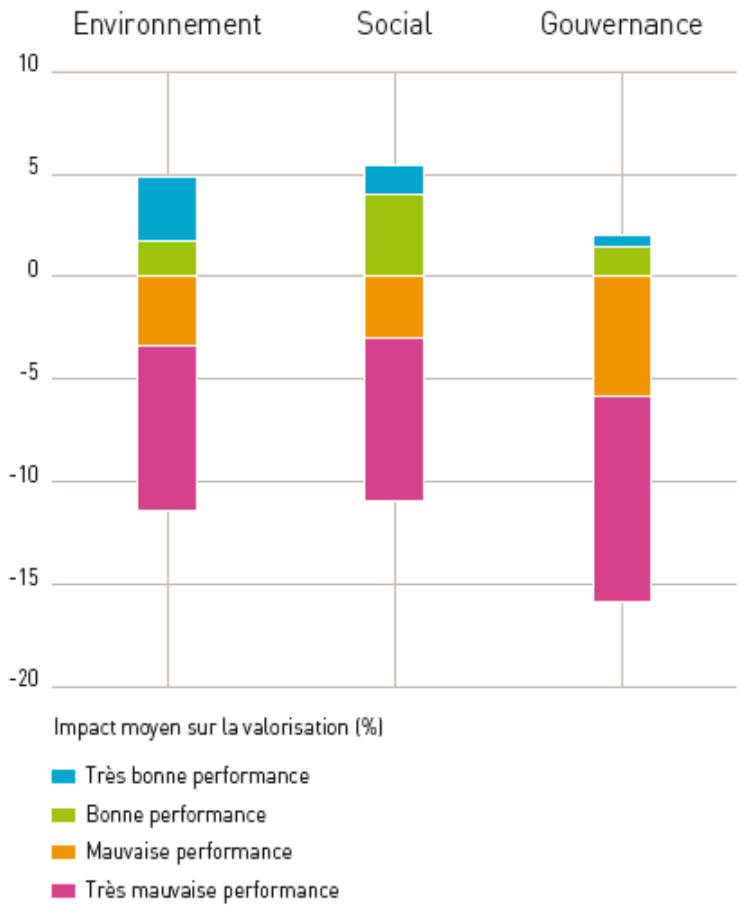
Briefing paper sent by UBS Bank to clients and investors, August 20th, 2014.

ACTING ON CLIMATE CHANGE IS NOT THE FOE OF GROWTH, QUITE THE OPPOSITE

TOP RESEARCHERS AND PRACTITIONERS HIGHLIGHT THE DOUBLE BONUS

A good environmental or social policy increase significantly by 5% the worth of a corporation. However, corporate management denying these concerns is taking a slice out of company value firm almost 10%.

Impact of ESG performance on the value creation of companies



Source : Study on the boosting of extra financial performance of companies by capital investors, 2012.

IMPLICATE INVESTORS IN THE OPPORTUNITIES CREATED BY THE THIRD INDUSTRIAL REVOLUTION IN THE NORTHERN REGION

VARIED AND COMPLEMENTARY FUNDING TOOLS

- **Traditional channels**

Banking, European Union, the state and its agencies, French Environment and Energy Management Agency, BPI, CDC, business Angels, ethical finance (Triodos, Banca Etica, NEF)

- **The innovative tools**

Crowdfunding, equity, dedicated savings passbook, Funding Hub



Towards a new step with the implementation of an investment fund dedicated to the Third Industrial Revolution in the Northern region

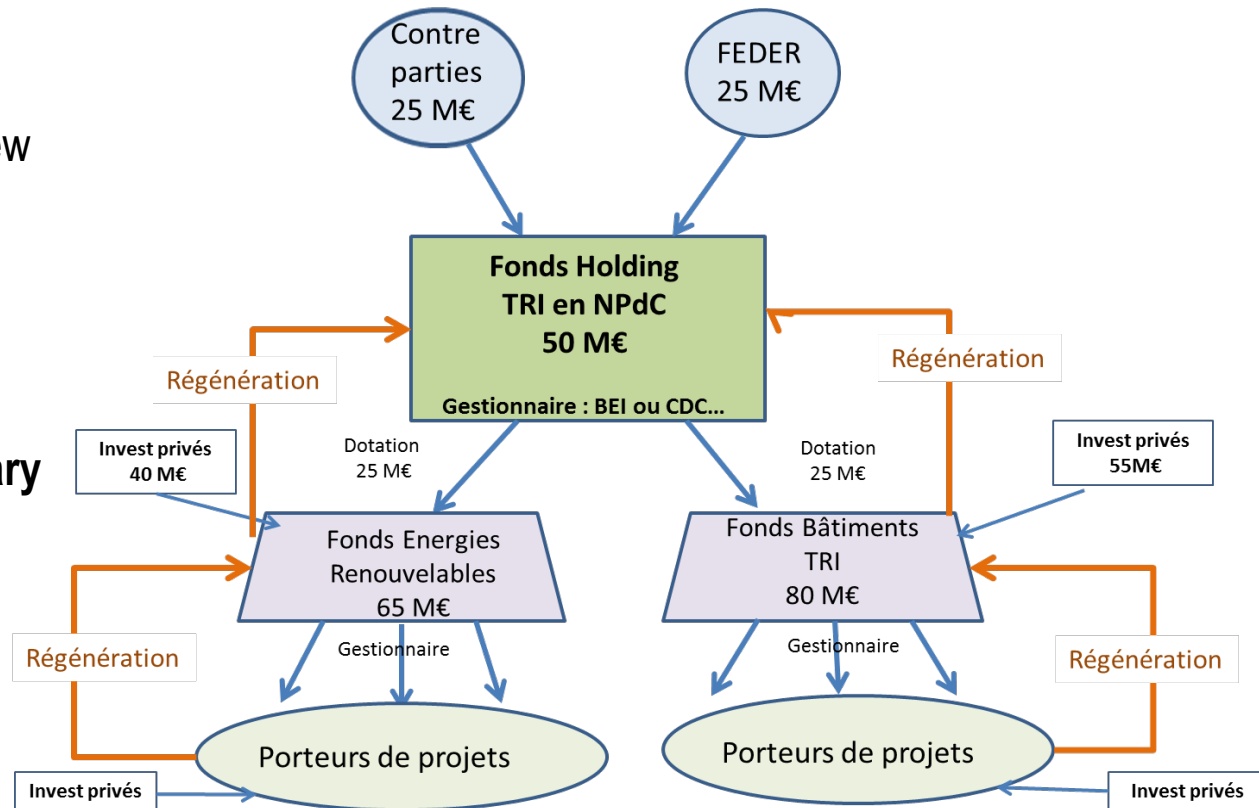
IMPLICATE INVESTORS IN THE OPPORTUNITIES CREATED BY THE THIRD INDUSTRIAL REVOLUTION IN THE NORTHERN REGION LAUNCHING A DEDICATED FUND

Thematic funds : green buildings, ecodistricts, energy efficiency and storage, renewable energies and new technologies

Backed up by the European Investment Bank (BEI)

Three alternative or complementary tools to subsidies

- Equity
- Debt
- Guarantee



IMPLICATE INVESTORS IN THE OPPORTUNITIES CREATED BY THE THIRD INDUSTRIAL REVOLUTION IN THE NORTHERN REGION

AN OPEN INVESTMENT FUND

**CROSS SHAREHOLDING OF BANKING AND INVESTMENT BANKS, INSTITUTIONAL INVESTORS,
INSURANCES COMPANIES, PENSION FUNDS AND SOVEREIGN WEALTH FUNDS**

Requests by certain investors with bigger financial possibilities(pension fund, insurers)

Participation of the ERDF (European Regional Development Fund), European Investment Bank(EIB), Public Investment Bank.

**Synergies by combining public and private investments and leveraging ;
optimum mutual risk sharing particularly in "gray areas" (technological
uncertainty)**

**SELF REGENERATING PUBLIC FUNDS : THE CASH FLOW IS
PERPETUALLY REINVESTED IN NEW PROJECTS**

LAUNCHING A 3IR FUND : HIGH INVESTMENT OPPORTUNITIES IN THE TECHNOLOGY AND SECTORS OF TOMORROW

TOP LEVEL MANAGEMENT AT THE SERVICE OF PROJECT PROSPERITY

A valuable multi skilled management

Technical, industrial, engineering skills and know-how : energy efficiency, renewable energies, digital economy

Solid financial competency and experience : experts in equity and investment capital

Back up and support by the BEI and CDC in setting up and running the fund.

Recognized professionals assuring the industrial viability and financial success of the fund.

LAUNCHING A 3IR FUND : HIGH INVESTMENT OPPORTUNITIES IN THE TECHNOLOGY AND SECTORS OF TOMORROW

PERFORMANCE AND PROFITABILITY

- The break even point of renewable energies is overtaken
- A comprehensible project which blends economic, social and environmental performances
A triple bonus : social(employment), environmental(green house emissions) and financial earnings(benefits)
- Attenuate and soften risks by size and diversity : heterogeneity of actors, realms and sectors, the economies of scale
- Positive emulation and spreading success all along the value chain

A new value and wealth : efficiency, productivity, competitiveness, potential jobs and possibilities to corner new markets

Return on equity, cash flow stability, dividend growth

LAUNCHING A 3IR FUND : HIGH INVESTMENT OPPORTUNITIES IN THE TECHNOLOGY AND SECTORS OF TOMORROW

RESTRICTED VOLATILITY AND RISKS WITH THE STABILITY OF THE 3IR
A LASTING PROJECT FOR THE MEDIUM AND LONG TERM

A strong consensus of all regional stakeholders which allows :

- Clear long term policy signals
- Facilitating deployment of long term infrastructure investment by appropriate incentives
- Avoid retroactive impact on existing investments

Complete trust of the European Union, the State and the Region

Renewal of public funds by recycling : the cash flow is perpetually reinvested in new projects

Green estate : ecodistricts, positive energy buildings, micro-power plants

The fund is a robust business case. Thanks to a predictable regulatory it offers a basis for stable revenue streams. It provides certainty and reliability.

LAUNCHING A 3IR FUND : HIGH INVESTMENT OPPORTUNITIES IN THE TECHNOLOGY AND SECTORS OF TOMORROW

TRANSPARENCE GOVERNANCE: ACCOUNTABILITY AND TRUST

Traceability of cash assets

Enforcement of mandates in socially responsible investment(SRI), traceability of funds

Enhancement of reputation, brand gains : sustainable development, narrowing the fairness gap between generations

Investors have their say in paramount decisions

No blank checks

A pledged commitment and partnership in decision making

Managers under compulsory mandates and close vigilance, with an obligation for integrity and public transparency (public reporting)

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JOIN THE REVOLUTION

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