

## Submission for Productivity Commission – Transition to Low-Emissions Economy

1.10.2017

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## SYSTEMS THINKING & THE THIRD INDUSTRIAL REVOLUTION (TIR) A Narrative & Strategy for a new 21<sup>st</sup> Century Economic Transition

It is great to see the excellent work of the Commission in the area of low-carbon transitions.

My name is Dave Henley - a Masters Students with the Centre for Sustainability at the University of Otago. My research is focused on using Systems Thinking and Systems Dynamics to explore the potential for low-carbon economic transitions to the new 21st Century economy.

A focus of my research has included looking at the work of **Jeremy Rifkin and the economy-wide sustainable low-carbon strategic plans (with *Productivity* as a central focus) which have been launched in several flagship regions of Europe over the last 2 years.** These sit within the context of an EU wide long term 21<sup>st</sup> Century economic vision called *Smart Europe*, that was launched by the EU Commission and Rifkin in early 2017.

The approach is very **comprehensive and collaborative** with participation from all sectors of society. It is a serious attempt at an **economic paradigm shift – A Third Industrial Revolution** – addressing multiple elements, and is having big impact in the EU (Smart Europe) and China (Internet Plus Policy) in particular. It acknowledges that the likely underpinning infrastructure of the 21<sup>st</sup> Century economy, will fundamentally favour a more collaborative, lateral and distributed society, governance and business models. This is emergent - even without a climate crisis and emissions challenge, the way we organize and interact within society is set to radically change because of this underlying systemic shift. We must harness and understand this, and place it at the centre of our response, rather than focusing on emission reductions in a less systemic way.

I think New Zealand could also seize the opportunity to look at this process in some depth – a **whole system economic and societal transition vision** (rather than a less ambitious emissions reduction focus).

In regards to **productivity**, a third crucial component is highlighted in this analysis (alongside capital & labour) – i.e. **aggregate efficiency**. Essentially it is shown that the current industrial infrastructure has reached its maximum potential and a fundamental shift in the underpinning infrastructure of society (and accompanying evolution in governance, business models, and social changes) is required in order to realize the potential aggregate efficiency gains (and hence productivity gains) of a Third Industrial Revolution. This is explained more fully below and in the attached reports.

In terms of **implementation**, beyond the perspectives and ideas, **what really grabbed my attention about this approach, is the deep collaborative, strategic economy wide process and engagement that it has lead to** - as exemplified by the strategic planning process undertaken in the 3 Flagship EU regions. These included active participation from multiple stake holders, working in

conjunction with the TIR consulting group to generate the vision, plans, engagement and buy-in to begin implementing a system level change to the societies in question. This includes a shift to a Third Industrial Revolution infrastructure, governance systems etc., and as a result, accompanying emissions reductions.

This moves the conversation and policy programme significantly beyond an 'emission reduction' focus to a much broader system shift - a fundamentally new underpinning infrastructure platform and accompanying governance and economic shifts. This is really a question of how to transition to a 21st Century economy, which happens to be low-emission, rather than how to transition our current economy to a low emission version of itself with a 'little bit of digital tech'.

As a systems thinker myself (my current research using System Dynamics) this seems far closer to where we need to be. It also highlights another key strength that this approach offers – a strong compelling **narrative**.

*We need a new economic vision for this planet... and it better be compelling.*

*We need a game plan to deploy that vision...and it better be deliverable*

*...and fast. This is a paradigm shift. - Jeremy Rifkin 2016*

My research identifies three important higher-level factors that play a crucial role in transformation & transitions – which I have called the *21st Century Toolkit/Lenses* –

1. Embracing & understanding a '**Systems Thinking Perspective**',
2. **Stretching the Possible** – unleashing Story, Vision & imagination –  
i.e The importance of **Envisioning the Future** (in a way that is free of the shackles of perceived constraints of what is 'practically possible')  
*Please see attached References for *Systems Thinking & Envisioning**
  - a) *Systems Thinking - A Primer,*
  - b) *Places to Intervene in a System, &*
  - c) *Envisioning a Sustainable Future*
3. **Collective Narrative Clarity** (that has strong foundations in the previous two elements).

**The Third Industrial Revolution Narrative & Strategic Plans – deliver in all three areas.** The power of a clear narrative, grounded in pragmatism and reality, but not afraid to stretch beyond (envision) what we currently understand, and capable of bringing a sense of clarity and coherence to the wide array of disruptive change we face, looking to deeper underlying systems level explanations (Systems Thinking), is crucial.

This provides a **rallying point** around which we can collectively gather, with enhanced clarity, alignment, a deeper shared understanding of what opportunity we face and the system level factors that underpin our society, allowing us to tackle this transition in a serious and exciting manner.

#### ***IN SUMMARY – THE OPPORTUNITY FOR AOTEAROA NEW ZEALAND***

**While a focus on emission reduction targets and mechanisms is crucial, I think a huge risk for NZ would be to place the majority of our focus and policy settings to this end and not go further, and hence miss the opportunity to 'leap-frog' and embrace cutting edge approaches like those in the EU flagship regions. This is an opportunity to actively participate and transition our economy and society to a new, more collaborative Third Industrial Revolution**

**paradigm, not simply a more high-tech, digital, low-carbon version of our current economic structure.**

**I would recommend that we engage with Jeremy Rifkin's TIR Team, and invite him to New Zealand to engage with our journey here - why not seize the opportunity to make Aotearoa New Zealand a flagship, not only in emissions reductions, but more broadly in a new economic and societal era.** I have been in conversation with his team in Washington D.C. & there is interest in this potential. Also the Road Map Next Economy (RNE) team from the Flagship region of Rotterdam & the Hague are open to sharing their experiences here in New Zealand.

I have attached charts, and the summary reports from the *3rd Industrial Revolution* Strategic Plans of [Rotterdam & the Hague](#) and [Luxembourg](#) (2016), which illustrate the broad structure to their approach, i.e. an economic paradigm shift, rather than just a strategy for emission reductions.

The Preface / Intro to the Luxembourg report includes a good summary of the underpinning ideas around productivity and aggregate efficiency.

For a good overview and introduction to the scope and implementation of this TIR narrative & approach I recommend viewing one of the recent presentations by Jeremy Rifkin to the [EU Bank \(2017\)](#) or [7th European Summit of Regions and Cities \(2016\)](#).

In addition, a Documentary ([preview](#)) of this general presentation was premiered at the New York Trifecta Film Festival earlier in this year (similar in style to Al Gore's *Inconvenient Truth & Sequel* in format). It has not yet been distributed anywhere in the world as yet, but I have been in contact with the producers and we are able to hold screenings for key change makers and leadership if there is interest.

Please do not hesitate to get in touch if there is anything I can do to assist the commission with its enquiry, and I would be more than happy to offer whatever clarification or further information could be of assistance.

Many thanks  
Dave Henley

Please find ..

**A) Background Information (in document below)**

- (1) An introduction (bio) to Jeremy Rifkin,
- (2) Third Industrial Revolution (TIR) – on the ground in action
- (3) Outline of TIR
- (4) Presentations (by Rifkin), Articles and books on TIR
- (5) Links to TIR Strategic plans – EU, China and EU Flagship regions

**B) Hyperlinks (in text)**

**C) Attached**

**Strategic Plans from Flagship regions of..**

*Rotterdam and the Hague & Luxembourg,*

*& several charts of strategic approach from those reports.*

**Systems Thinking References (from 21st Century Toolkit/Lenses).**

*a. Systems Thinking - A Primer (Meadows 2008)*

*b. Places to Intervene in a System (Meadows 1999)*

*c. Envisioning a Sustainable Future (Meadows 1999)*

# THE THIRD INDUSTRIAL REVOLUTION (TIR) - *Jeremy Rifkin*

## A NARRATIVE & STRATEGIC FRAMEWORK - for a New 21st Century Economic Transition

### 1. Bio - Jeremy Rifkin

Jeremy Rifkin, an economist & societal thinker based in Washington D.C., is an adviser to the EU leadership, the People's Republic of China, and German Chancellor Angela Merkel on the Third Industrial Revolution (TIR). He is a principal architect of the EU's long-term TIR economic vision called Smart Europe (launched in 2017) & is advising the European Commission on the deployment of the plan in regions across the continent. Rifkin is also a principal architect of China's TIR vision and an adviser to government agencies on the deployment of the China Internet Plus transformation underway in the 13th Five-Year Plan.

*We need a new economic vision for this planet... and it better be compelling.  
We need a game plan to deploy that vision...and it better be deliverable  
...and fast. This is a paradigm shift. - Jeremy Rifkin 2016*

Rifkin is president of the TIR Consulting Group, which works with regions across Europe to conceptualize, build out, and scale TIR infrastructure & strategic plans; and also lectures at the Wharton School's Executive Education Program.

### 2. On the ground in action - see 5. for materials & plans

**TIR roadmap economic plans are already on the ground having impact in the EU & China, and the collaborative, cross-sector process itself to craft and action these strategic plans is an important part of the impact.** Along with Germany, three flagship EU regions have recently customised their own versions & launched strategic, society/economy-wide TIR plans; [Haut-de-France](#) (2013), [Rotterdam and the Hague](#) (2016) & the country of [Luxembourg](#) (2016), while [Catalonia](#) has just launched its process. All of the plans were developed using collaborative engagement with all sectors of society, business, civil society etc. involved.

**How about Aotearoa or Auckland next?**

### 3. Outline

What is the 3rd Industrial Revolution (TIR) & dawning Collaborative Era?

- *an Explanation and a Roadmap*

The Third Industrial Revolution (TIR) narrative and framework – is both an **explanation** and **road map**. It offers a coherent, compelling explanation that brings clarity to the economic moment we find ourselves in by identifying the key challenges we face at a systems level. It then provides a comprehensive roadmap plan for the economic transition we must make.

**The premise of the TIR is that we are at the dawn of a new economic paradigm** - both a technological revolution & a shift of consciousness - at the same time as facing daunting economic and environmental challenges.

According to Rifkin's analysis, economic eras shift when three defining technologies emerge and converge, to create a new underpinning infrastructure, i.e. a revolution in communications, energy and logistics – how we manage, power and move economic activity. Alongside the physical infrastructure shift, this is accompanied by a shift in our governance, business, financial, legal & social systems and indeed consciousness. These accompanying shifts both emerge from and actively enable the emergence of a new economic era, meaning they require our attention and active engagement alongside the technological aspects of a new era, especially if we want or need the transition to move quickly, and deliver certain outcomes like a low-emissions economy.

The two previous economic eras that saw shifts in these 3 key areas can be distinguished as

- **1<sup>st</sup> Industrial revolution**  
19<sup>th</sup> Century – Steam powered printing & Telegraph, Coal, and the locomotive
- **2<sup>nd</sup> Industrial revolution**  
20<sup>th</sup> Century – Telephone, Radio, Oil, Internatl Combustion Engine

There was of course overlap between these eras and a transition from one to the next.

A key outcome in each shift of economic era that Rifkin identifies (but is often ignored by main stream economics) is the great improvements they allowed to **Aggregate Efficiency** – a measure of the useful work (energy) embedded to work lost in each step of conversion on a value chain. Only 12.5% of economic growth over the 20<sup>th</sup> Century can be explained by improvements in productivity generated by labour & capital. However a great deal of the remainder is a result of improvements in Aggregate Efficiency enabled by the new infrastructure. **So if we are concerned about improving productivity, then we need to focus a great deal more on aggregate efficiency as a third and dominant component.**

**Today, the beginning of the 3<sup>rd</sup> industrial Revolution** sees the emergence and convergence of 3 new key technology platforms - the *Communications* Internet, a Distributed Renewable *Energy* Internet & Automated low-carbon *Logistics* Internet together form an Internet of Things, which will radically alter the way we organise economic activity in society. This new underpinning infrastructure platform, in contrast to the 20<sup>th</sup> Century Infrastructure, favours distributed, lateral & collaborative activity and has the potential to significantly improve efficiency, productivity, and lower our ecological footprint. However to truly optimise this - we must enable it in the right way, evolving our business models, making good decisions and setting up good supportive governance structures, as we enter this new era, which Rifkin terms as a Biosphere Civilisation.

**With a focus on the productivity potential of underpinning infrastructure, the emerging sharing economy, and new business & governance models required, this is a comprehensive, transformational economy wide approach.** It provides a rallying point at scale - around which the many initiatives and ideas already underway, can be taken to the next level to shift this transition into high gear. With a more coherent and shared understanding of this bigger emerging reality, decisions in business and governance at all levels can start to realign more effectively, positioning regions at the cutting edge of this shift, as Flagships and Pioneers.

## 4. Presentations, Articles & Books

### 1. Presentations by Jeremy Rifkin to EU

- [7th European Summit of Regions and Cities](#) (2016)
- [EU Bank](#) (2017)

2. **Upcoming Documentary** – *from Vice Impact Films (premiered @ Trifecta film festival New York 2017)*

**The Third Industrial Revolution – A new story for the human family** ([preview](#))

NOTE: This has not yet been distributed anywhere in the world as yet, but I have been in contact with the producers & we are able to hold screenings here in NZ for key change makers and leadership if there is interest.

3. [The Empathetic Civilisation](#) - 10min – comment from Rifkin on the nature of humanity (based on his Book of the same name) (**gives good context**)

4. If you prefer to read

#### Article

a. [A key player in China and the EU's 'third industrial revolution' describes the economy of tomorrow](#)  
b. [Welcome to the Third Industrial Revolution - Article Series on Huffington post](#)

**Books** - 2 most recent

[The Third Industrial Revolution](#): *How Lateral Power is Transforming Energy, the Economy and the World* (2011)  
& [Zero Marginal Cost Society](#): *The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism* (2014)

## 5. Strategic Plans – EU/China & Flagship regions

Please find below links to 4 Strategic Plans that the *TIR Consulting Group* has facilitated over the last few years (several in 2016) with major regions in the EU.

These are serving a flagship and beacon examples of the approach and include, Catalonia (just beginning the process), Northern France, Rotterdam & the Hague, & Luxembourg. These are more intensive examples of the general policy previously established by Rifkin and others in the [EU](#) and [China](#).

### EU & CHINA LEVEL:

EU (Essay) – [Rifkin on Digital Europe](#) & [Rifkin on a Smart Green TIR for Europe 2015-2020](#)

EU (Video) - [Intro to Digital Europe \(TIR Europe\)](#) – 3.30 mins

China (Article) - [China Embraces TIR](#)

### EU FLAGSHIP REGION LEVEL:                    STRATEGIC PLANS

#### ROTTERDAM & THE HAGUE (Metropolitan region of...) - 2016

Website: [Roadmap Next Economy](#)

Video: [Intro to Road MapNext Economy](#)

(10mins) Plan: [Road Map Next Economy](#) (60 pages) - ATTACHED

Full Plan: [Road Map Next Economy - TIR \(Full\)](#) (530 pages)

#### LUXEMBOURG – 2016

Website: [Third Industrial Revolution](#)

[Luxembourg](#) Portal: [Homepage](#)

Full Plan: [Luxembourg Final Report - TIR](#)

#### NORTHERN FRANCE – Haut de France – 2013

Plan: [Master plan Rev3](#)

Article: [How the Third Industrial Revolution Can Transform France](#) - *Regional President & President of the Chamber of Commerce*

#### CATALONIA - 2016

Website: [Rifkin encourages Catalonia to lead the TIR](#) - *Links to Presentation plus Q&A*