

***REGIONAL TRENDS IN ENERGY
INVESTMENT, TRADE AND INNOVATION
FOR ENERGY SECTOR TRANSFORMATIONS***

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**Fourth IEF - EU Energy Day
Riyadh, 18 February 2020**

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OUTLINE

- 1. From Clean Energy for All to the Green Deal**
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- 4. Technology innovation: Horizon Europe**
- 5. The black swan: risks ahead**
- 6. Opportunities for EU-IEF enhanced dialogue in the Gulf Region**
- 7. Final remarks**



AIM: ZERO EMISSIONS

Harmonious. Efficient. Highly evolved.
Toyota's hybrid technology is designed to mirror nature.

The Toyota Prius features Hybrid Synergy Drive.
Its combination of electric and gasoline engines provides
clean, efficient performance.

1. FROM CLEAN ENERGY TO THE GREEN DEAL: THE MILESTONES (I)

- **Clean Energy for All Europeans (package of directives and regulations) – From the year 2016 onwards**
Aim at a low-carbon economy for 2030 in line with Paris Agreement of 2016 and UN Sustainable Development Goals
- **The European Green Deal (Communication from the European Commission to the European Parliament and Council) - 11 December 2019**
Aim at a carbon-neutral Europe by the year 2050 (no net emissions of GHG) with a «Climate Law» by March 2020

The road to 2050



1. FROM CLEAN ENERGY TO THE GREEN DEAL: THE BIG CHALLENGES (II)

- Confronting the threat of global climate change**
- Ensuring energy supply security and affordability**
- Finding a unifying mission for European integration and convergence**
- Fostering economic growth and industrial competitiveness by relaunching public and private investment along a sustainable green course of actions**

1. FROM CLEAN ENERGY TO THE GREEN DEAL: DIRECTIONS FOR ACTION (III)

- **Goals and means of Clean Energy for All Europeans develop along five axis:**
 - a) Low-carbon sources and technologies
 - b) Energy efficiency
 - c) Energy security and solidarity
 - d) Single (internal) energy market
 - e) Research, innovation and competitiveness
- **Each EU Member State to prepare a National Energy and Climate Plan (NECP) for 2021-2030 also outlining a long-term strategy for at least the next 30 years**

1. FROM CLEAN ENERGY TO THE GREEN DEAL: TRENDS FROM THE NECPs (IV)

- **In the European NECPs the transition towards a low-carbon economy by 2030 generally entails:**
 - a) Diversification, renewable energies and energy efficiency
 - b) Increased large-scale electrification
 - c) Natural gas as the preferred fuel for the energy transition
 - d) Digitalisation and smart infrastructure to allow energy sectoral integration
 - e) Strengthening of interconnections of electricity and gas grids
 - f) Energy technology innovation (transition is not technology-neutral in Europe)
 - g) Stakeholders participation and consumers at the heart

ACCELERATE

2. THE CASE OF ITALY – NATIONAL ENERGY AND CLIMATE PLAN 2021-2030: THE SITUATION (I)

Italy (2019)	Population	60 million
	GDP	1,606 bn Euro
	Energy production	37 Mtoe
	Energy imports	123 Mtoe
	TPES	156 Mtoe
	Electricity consumption	319 TWh
	CO ₂ emissions (energy-related)	338 MtCO ₂
	TPES/GDP	0.097 toe/000 Euro

2. THE CASE OF ITALY – NATIONAL ENERGY AND CLIMATE PLAN 2021-2030: THE TARGETS (II)

		EU	Italy
➤ Renewable energy contribution to TPES	by 2020	20%	17%
	by 2030	32%	30%
➤ Energy efficiency vs PRIMES 2007 Scenario	by 2020	-20%	-24%
	by 2030	-32.5%	-43%
➤ GHG reduction vs 2005 (emission trading system)	by 2020	-21%	-23%
	by 2030	-43%	-43%
			(at least)
➤ Coal use	Recommended closure of all coal-fired power plants in Italy by 2025		

2. THE CASE OF ITALY – NATIONAL ENERGY AND CLIMATE PLAN 2021-2030 – THE GOVERNANCE OF THE ENERGY TRANSITION RELIES UPON FIVE «TRANSFORMATIVE ENABLERS»

- Digitalisation
- Decarbonisation
- Decentralisation
- Diversification
- Deregulation (and re-regulation)
- **The energy sector transition becomes part and driver of a total transformation of the economy and society**

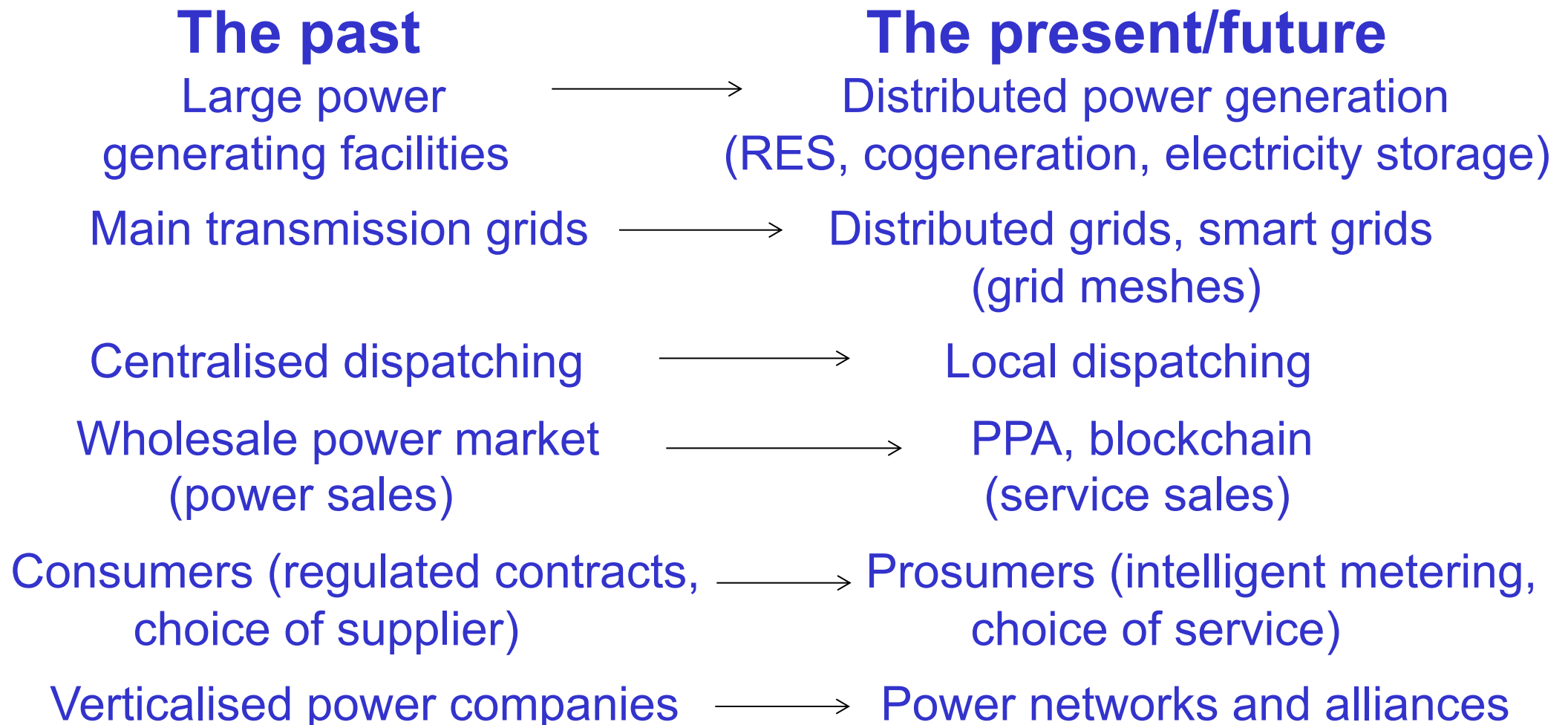


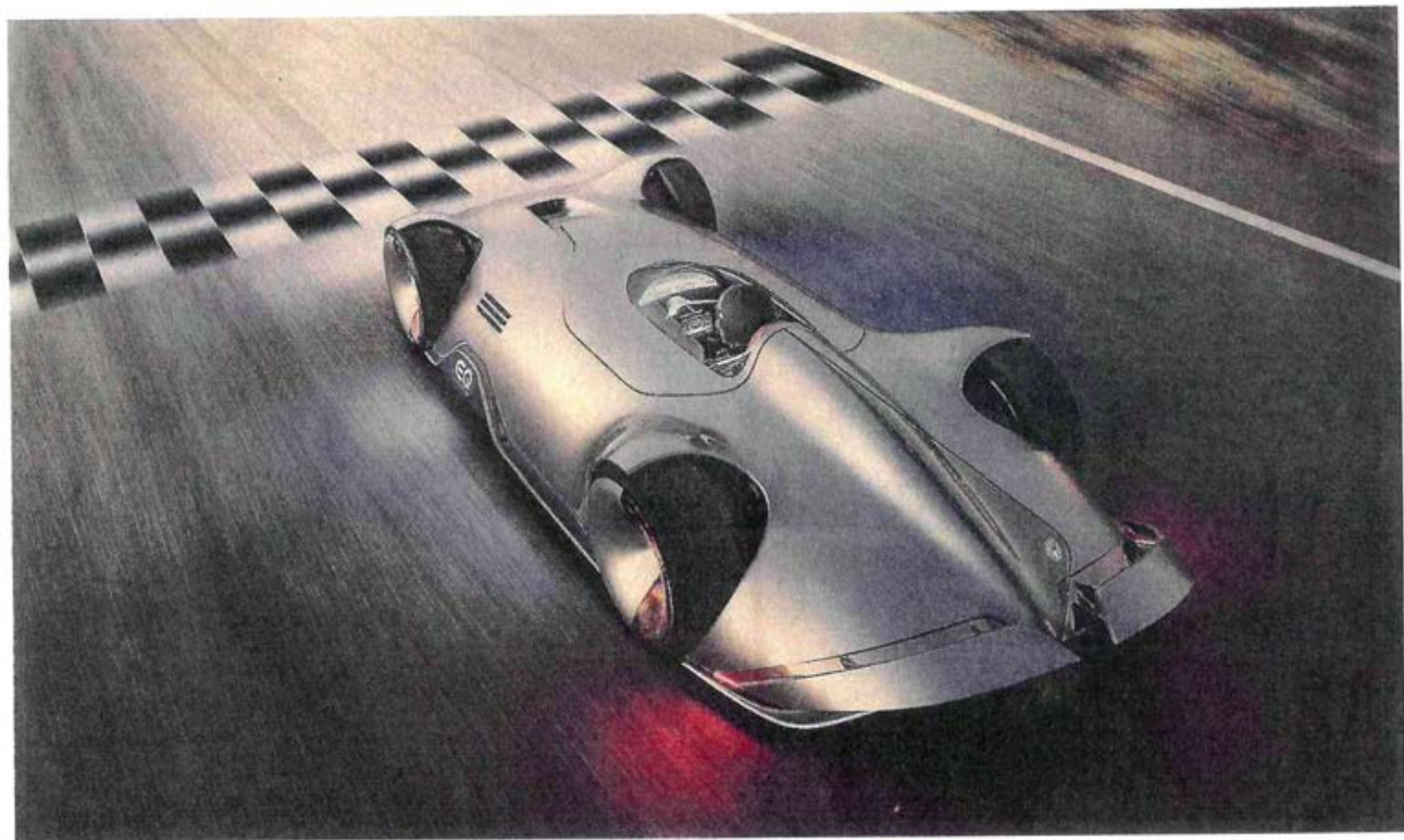
Keeping the customer satisfied



Belgium	BEL	Denmark	DKK	France	FRF	Germany	DM	Greece	GRD	Italy	Lira 9.500	Netherlands	FL	Portugal	Escudo	Spain	PTA25
Canada	Can\$ 7.40	Finland	FMk	Japan	Yen	UK	£	Sweden	Kr	Switzerland	Sfr	Taiwan	NT\$	Turkey	Lira 17.750	USA	Dollars

3. ENERGY TRANSITION IN THE POWER SECTOR (TOWARDS THE GREEN ELECTRIC GRID) (I)

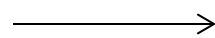




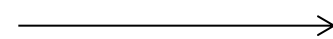
3. ENERGY TRANSFORMATION IN THE TRANSPORT SECTOR (TOWARDS SUSTAINABLE MOBILITY)

The past

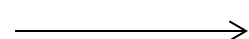
Light and heavy transport



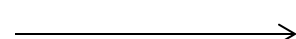
Gasoline and diesel fuel
(improved ICE)



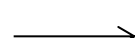
Vehicle ownership



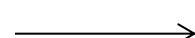
Multiple – use vehicles



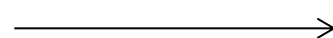
Driving skills (security by obscurity)



Freedom of access to the road



Regional and verticalised
car/vehicle producers



The present/future

Mobility services, smart logistics

Biofuels, LPG, LNG
hybrids and electric vehicles

Vehicle sharing, rent (Uber, Lyft, DiDi,...)

Specialised and inter-connected
vehicles, micromobility (e-bike,
e-scooter, drones)

Self-driving cars (security by AI)

Limited road use and reserved
areas

Producers' networks and
global alliances

March of the machines

A SPECIAL REPORT ON ARTIFICIAL INTELLIGENCE



USA	Canada	UK	France	Germany	Italy	Japan	Spain	Sweden	Switzerland
\$12.00	\$12.00	£3.50	FF10.00	DM12.00	Lit. 12000	¥1200	1000	1000	1000
USA	Canada	UK	France	Germany	Italy	Japan	Spain	Sweden	Switzerland
\$12.00	\$12.00	£3.50	FF10.00	DM12.00	Lit. 12000	¥1200	1000	1000	1000

3. ENERGY TRANSFORMATION IN THE MANUFACTURING INDUSTRY SECTOR (TOWARDS INDUSTRY 4.0) (III)

The past

Manufacturing enterprise
from feedstock to the product
(linear process)

Fossil fuels
steel, aluminum, silicon

Automated production
(univalent robot)

Process centralisation and
verticalisation

National market and
preferred markets

Permanent and temporary jobs

The present/future

Zero imprint enterprise:
total recycle, zero waste
(circular process)

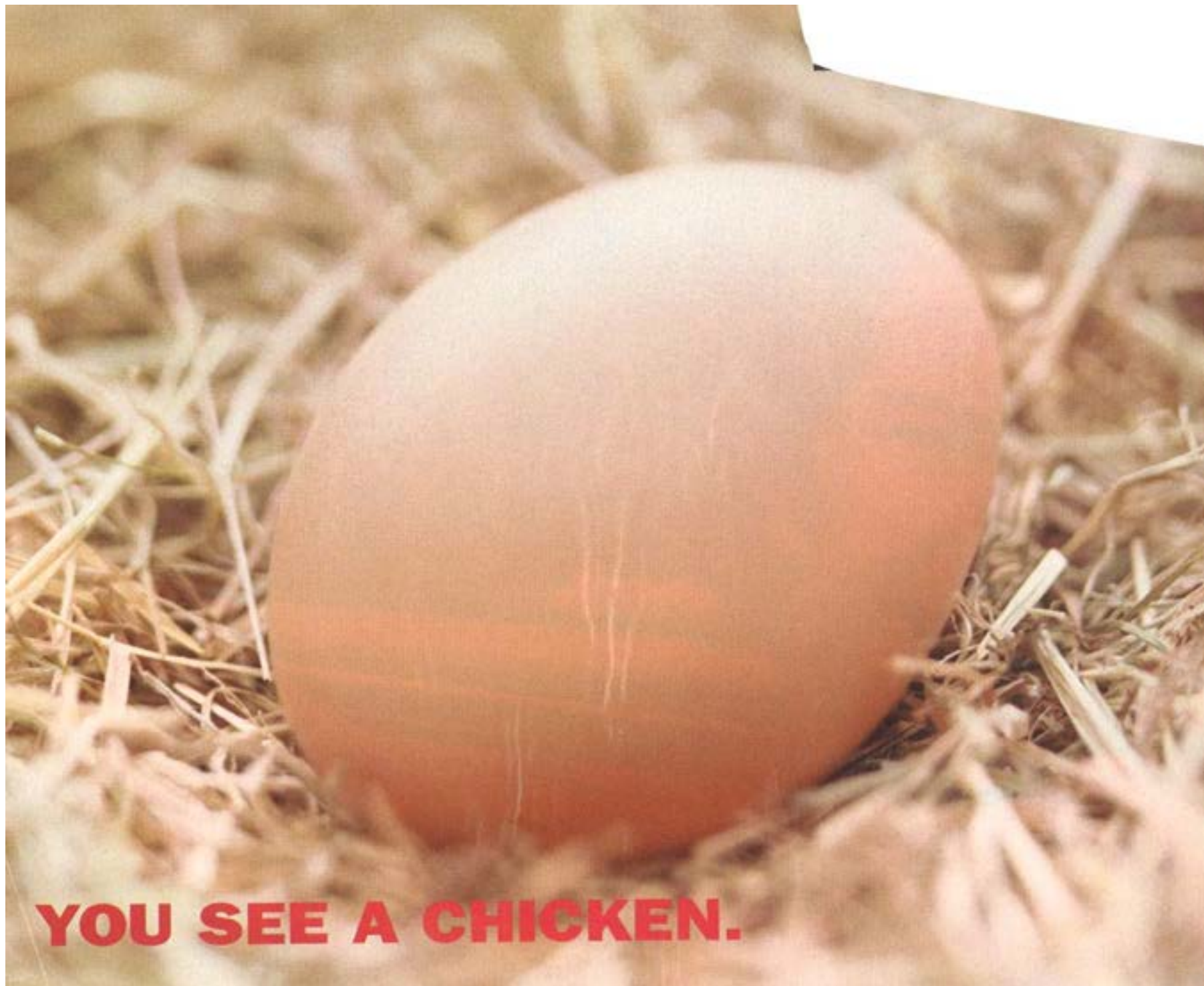
Energy efficiency, renewable energy
silicon, lithium, cobalt, rare earths

Integrated intelligent production
(AI robot/cobot, augmented reality,
machine learning, big data, 3D printing, 5G)

Process decentralisation and
delocalisation

Global market and product
quality

Flexible work, temporary activities



YOU SEE A CHICKEN.

4. TECHNOLOGY INNOVATION: HORIZON EUROPE 2021-2027

- **Horizon Europe** would be the biggest EU Research and Innovation Programme ever with 100 bn Euro of funding available over 7 years (2021 to 2027)
- Instrumental to the implementation of the Clean Energy for All Europeans' package together with the **European Strategic Energy Technology Plan (SET Plan)**
- **Basic aims are to:**
 - Make Europe a world-class science performer
 - Remove obstacles to innovation like cost of start-ups, market fragmentation, skill shortage
 - Promote public-private partnership in RD&D



5. THE BLACK SWAN: KNOWN UNKNOWNNS (I)

The black swan might appear with risks for established scenarios and decisions

- **Stranded investment and assets**

Cost could be very high dependent upon the speed of the transition and its course: economic disruptions might be expected

- **Asymmetric competition within the EU**

EU Member States show great disparities in their energy supply and demand patterns: consequence could be uneven gains and drawbacks

- **Asymmetric competition outside the EU**

Low-carbon and carbon-neutral EU economy would face major laggards: carbon tax at the border has been suggested

5. THE BLACK SWAN: UNKNOWN UNKNOWNNS (II)

The black swan might entail events which are not included in the models

- **Political cohesion in the EU**

EU is relatively young and its political cohesion might go through periods of turbulence

- **Technological breakthroughs**

Technology progress is not linear: brand new technologies in the energy and non-energy sectors might bring disruptions

- **Stability in the world economy**

World economy and international relations might go through dramatic changes over the period and force EU, IEF and their Members to change policies and programmes

IN BUSINESS YOU NEED
SPACE TO MANOEUVRE.



6. OPPORTUNITIES FOR EU-IEF DIALOGUE IN THE GULF REGION(I)

- **Enhanced GCC-EU dialogue:** Focus would be on the Gulf Region would allow to exchange with EU and its Members States views on energy policies, programmes, energy market organisation and their goals
- **Events might help while contributing to this action:**
 - Meetings under the GCC-EU Cooperation Agreement and Ministerial Council
 - 1st EU – Arab League Summit of 25-26 February 2019, Sharm el-Sheikh
 - 9th EU Energy Day of 13 January 2020, Abu Dhabi at the World Future Energy Summit 2020
 - 4th IEF – EU Energy Day of 18 February 2020, Riyadh

6. OPPORTUNITIES FOR EU – IEF DIALOGUE IN THE GULF REGION(II)

- **Horizon Europe Outreach:** Further joint research and innovation initiatives and programmes could be undertaken in the Gulf Region within the framework of Horizon Europe 2021-2027
- **Elements of the envisioned action:**
 - Link between EU-GCC Clean Energy Technology Network and the European Strategic Energy Technology Plan (SET Plan)
 - Development of clean low-carbon energy technologies or some sub-set
 - Open labour market for researchers

6. OPPORTUNITIES FOR EU – IEF DIALOGUE IN THE GULF REGION (III)

- **Education and Training:** With aim at human capital upgrading and technical training towards the energy transition an ERASMUS-like programme might be conceived for the Gulf Region
- **The programme might build upon:**
 - Existing ERASMUS for the EU Member States
 - Potential enablers: universities and education institutions in the Region
 - Possible new university networks or bilateral inter-university agreements

6. OPPORTUNITIES FOR EU-IEF DIALOGUE IN THE GULF REGION (IV)

- **B (EU) to B (Gulf) Platform:** Shared effort on green and low-carbon new energy technology
- **How to plan for the proposed platform:**
 - Joint ventures, partnerships and technology exchange
 - Optimum market access for innovative technology
 - Optimal circulation, access to and transfer of technology innovation

6. OPPORTUNITIES FOR EU-IEF DIALOGUE IN THE GULF REGION (V)

- **EU – Gulf Financial Facility:** Aim would be at providing advice and financial services on low-carbon energy projects, their financial feasibility and bankability, as well as identification and enactment of means and sources of investment either public or private
- **Ground for the action:**
 - Agreements between EIB and Arab Investment Bank while broadening their mandates
 - Basing upon other experience, for instance the FEMIP Trust Fund by the European Investment Bank for the Mediterranean Region
 - Concurrent action by the World Bank and international funds

7. FINAL REMARKS: IMPROVING EU-IEF INTER-ACTION (I)

- **The energy transition is an opportunity to strengthen the relations and co-operation** between the IEF and the EU, and their constituencies
- **The IEF Vision, Mission and Values Statement** as approved by the IEF Executive Board on 18 December 2019 could provide enhanced IEF-EU dialogue with **proactive background**
- Themes such as role of oil and natural gas in ensuring stability in the energy transitions, stranded costs and assets resulting from the transition, ensuring fair energy trade and transit, sustainable mobility and implications of new fuels, standards and technologies in the transport sector, all seem **themes deserving attention for future IEF-EU Energy Days**

7. FINAL REMARKS: IMPROVING EU-IEF INTER-ACTION (II)

- Taking advantage from **existing international collaborations** while avoiding duplication of efforts and programmes
- Ensuring **data collection and dissemination through JODI and EUROSTAT** and beyond
- Developing links **between IEF, the EU Commission and the Presidency of the EU**
- Preparing for **participation of EU entities** (the EU Commission) and **EU energy industry interests in the IEF advisory bodies** (i.e. IEF Intergovernmental Support Group and IEF Industry Advisory Committee)

“A lift-off for great new benefits.”



Questions?

