



AVANÇANT CAP UN NOU MODEL ENERGÈTIC

AUTOGENERACIÓ D'ENERGIA A LES EMPRESES. CASOS D'ÈXIT AL PENEDE'S

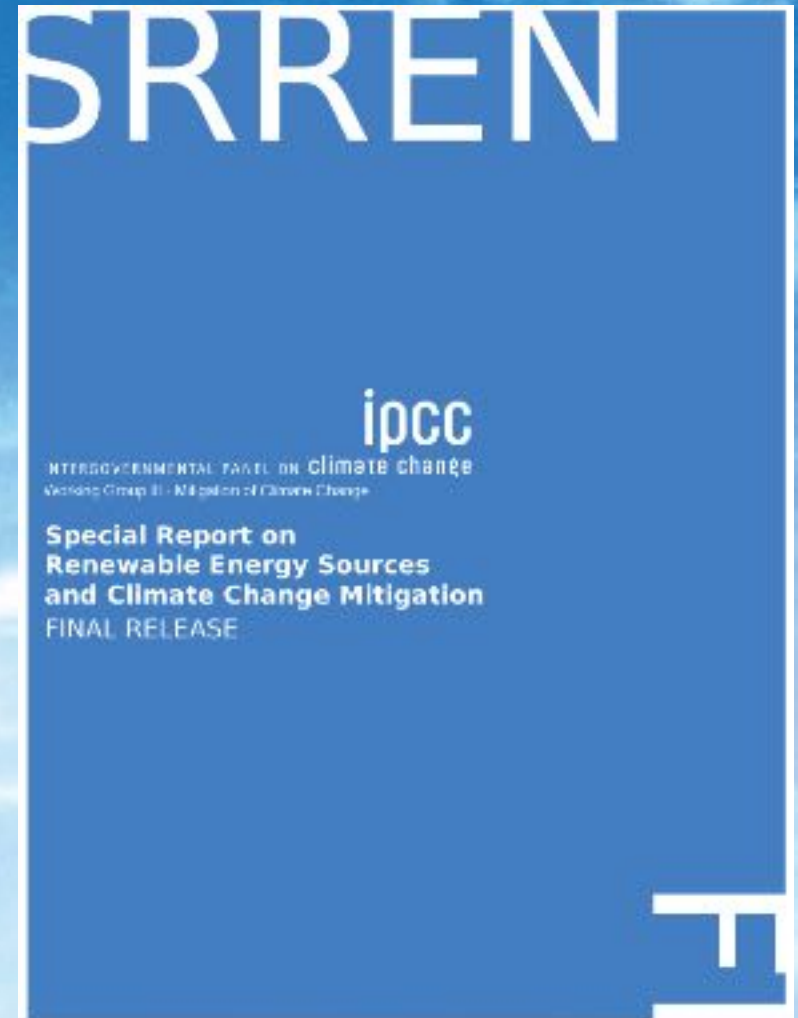
22 març 2018 a l'Auditori de la Família Torres de Vilafranca

**Lluitar contra el canvi climàtic
generant energia in-situ i ex-situ per
a les empreses**

Josep Puig i Boix
Dr. Eng. Ind.

IPCC: energies renouvelables

- IPCC, WG III, Mitigation of Climate Change



CMCC – COP21 / CMP11

- 30 nov. – 11 des. 2015: Acord de París



The Paris climate agreement: key points



The historic pact, approved by 195 countries, will take effect from 2020

Temperatures

2100



- Keep warming **"well below 2 degrees Celsius"**. Continue all efforts to limit the rise in temperatures to **1.5 degrees Celsius**"

Finance

2020-2025



- Rich countries must provide **100 billion dollars from 2020**, as a **"floor"**
- Amount to be updated by 2025

Differentiation



- Developed countries must continue to **"take the lead"** in the reduction of greenhouse gases
- Developing nations are encouraged to **"enhance their efforts"** and move over time to cuts

Emissions objectives

2050



- Aim for greenhouse gases emissions to peak **"as soon as possible"**
- From 2050: rapid reductions to achieve a balance between emissions from human activity and the amount that can be captured by **"sinks"**

Burden-sharing



- **Developed countries** must provide financial resources to help developing countries
- Other countries are invited to provide support on a **voluntary basis**

Review mechanism

2023



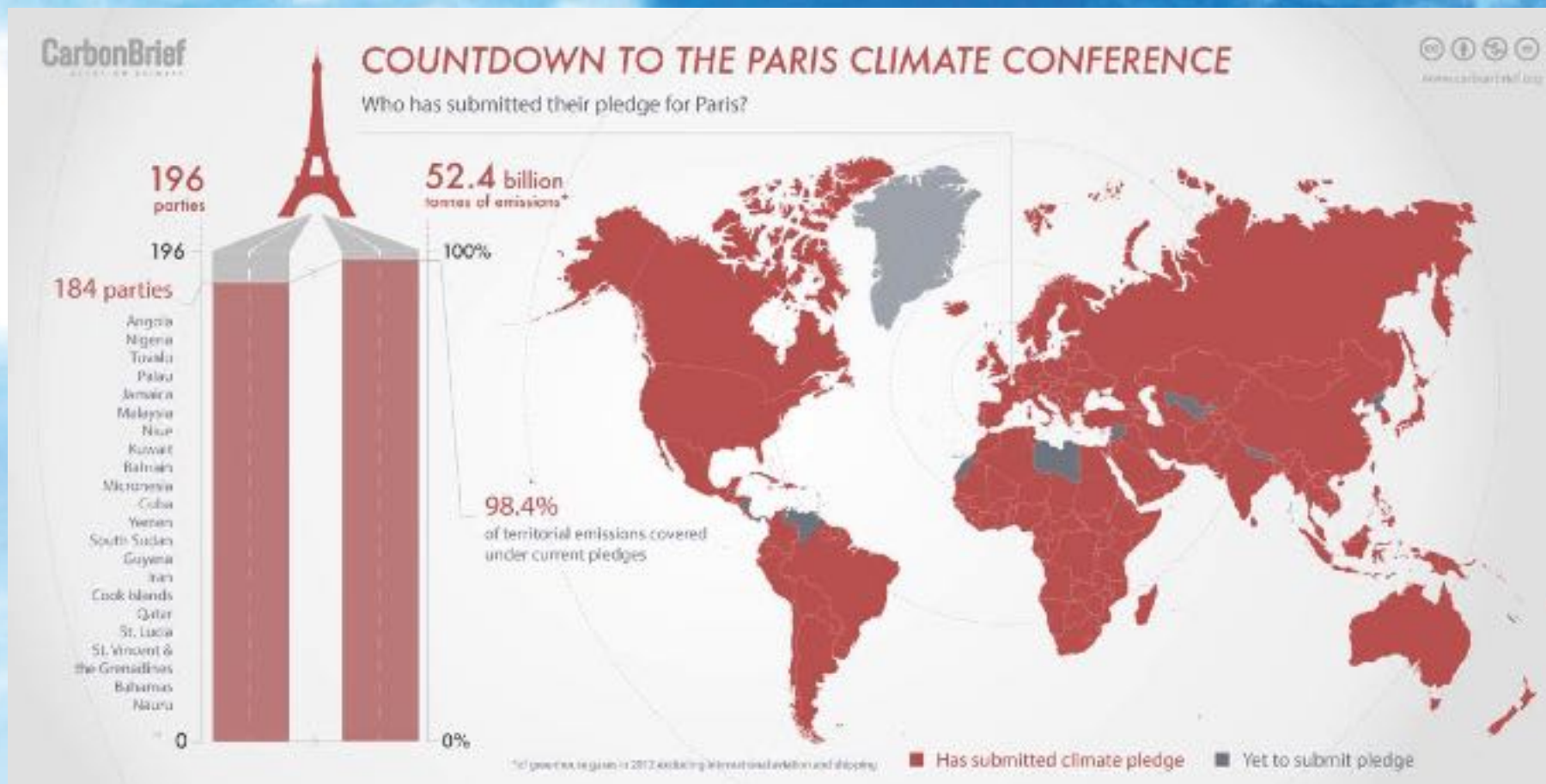
- A review every five years
First world review: **2023**
- Each review will inform countries in **"updating and enhancing"** their pledges

Climate damage



- Vulnerable countries have won recognition of the need for **"averting, minimising and addressing"** losses suffered due to climate change

Acord de París: Compromisos



L'acord de París



Acord de París: com s'hi ha arribat?

- Múltiples actors havien anunciat prèviament compromisos de reducció
 - Agències intergovernamentals
 - Xarxes de ciutats
 - Xarxes d'òrgans sub-estatals
 - Organitzacions empresarials
 - ONG
 - VIOs
 -

International Renewable Energy Agency

- IRENA

The energy sector accounts for more than two thirds of global greenhouse gas emissions. As such, energy must be our priority in bringing down CO₂ emissions.

A world powered by renewable energy is not only possible, it is inevitable.

Renewables are now – not in some utopian future, but today – the most affordable source of power in many parts of the world, a trend that will continue to grow.

Renewable energy technologies are creating more jobs on average than fossil fuel technologies and are therefore beneficial for society and the economy.

We are on the right path but more action is needed.

- Based on current policies and those under consideration the share of renewable energy in total final energy consumption will increase to only **21%** by 2030, causing an increase in global emissions.
- Reaching a **36%** share (enough to remain on a 2°C trajectory) would require the rate of renewable energy uptake to rise by around **1%** per year until 2030, a **six-fold increase** from current levels.
- To realise the emissions-reducing potential of renewables by 2030, global annual investment in renewable energy would need to double from current levels to reach over **USD 500 billion** by 2020, and would need to be further scaled up to an annual average of **USD 900 billion** between 2021 and 2030.
 - End-use sectors would account for roughly one third of investments, with the major part of investments (about two thirds) continuing to remain in the power sector.



Vision

Reducing Greenhouse Gas Emissions

CALIFORNIA CLIMATE CHANGE

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- State
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Science clearly underlines that to stay under a 2 degrees C temperature rise and spare the world and its people from dangerous climate change, a long term aim is needed—one that leads to a deep decarbonisation of the global economy while triggering the financial and technical support that will assist developing economies to engage, grow and develop.

The Under 2 initiative supports this reality...—it represents yet another positive signal towards a transformational Paris agreement.

— Christiana Figueres, Executive Secretary, United Nations Framework Convention on Climate Change

California continues to demonstrate that environmental protection and economic growth are complementary goals. The State works to share and leverage its experience and policies to maximize the benefits of emissions reductions around the globe, including climate benefits and export opportunities for California clean-technology companies. The Intergovernmental Working Group for the Climate Action Team coordinates and implements the State's efforts to partner and collaborate with other states, countries and jurisdictions interested in

- Climate Change Conference of the Parties – COP 21
- Intergovernmental Panel on Climate Change
- Pacific Coast Collaborative
- California Climate Action

Paris and beyond.

to 4

Reduce Short-Lived Climate

Safeguard California

2
ing Plan

Action Team
Research



- 1 Invest Early

- 2 Invest Broadly

- 3 Invest Boldly

- 4 Invest Wisely

- 5 Invest Together

Because the foundation of these innovations will likely come through government research pipelines, we will focus our investments on those countries that have committed to increase the size of those pipelines by participating in the international initiative known as **Mission Innovation**. Those countries are making a serious commitment to using smart government spending to increase the rate of innovation in their domestic innovation sector while helping the world find solutions to the serious problems created by climate change, high costs of power, and energy price volatility.

Quant CO₂ es pot emetre?

- Els governs del món van acordar, en l'Acord de París, limitar l'escalfament global per dessora de 2 graus:
- Això ens serveix com un punt de referència per a determinar la quantitat de Carboni a emetre per cada probabilitat d'assolir el límit de temperatura
- Quant més alta la probabilitat, més baixa la quantitat de Carboni a emetre

Pressupost de Carboni

1.000 PgrC =
 10^{12} tnC

THE CARBON BUDGET

The international consensus of climate experts is clear: The world is warming, and it's largely due to human activities. We're now living on a planet where global temperatures are warmer than most of the past 11,000 years.

The Intergovernmental Panel on Climate Change (IPCC) recently identified the world's "carbon budget," the amount of carbon dioxide that can be emitted if we are to have a likely chance of averting the most dangerous of climate change impacts. **The world is currently on track to spend the remainder of this budget in just three decades.**

Here's a look at the implications of exceeding the carbon budget—as well as actions the world can take to stay within it:

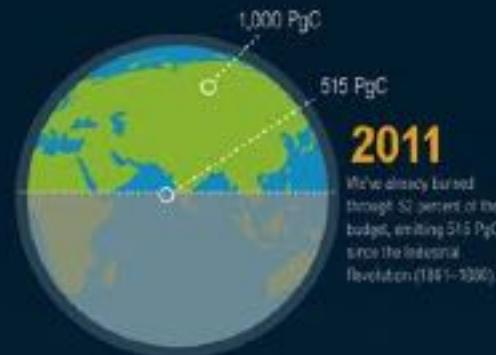
WHAT IS THE CARBON BUDGET?

The carbon budget is the estimated amount of carbon dioxide the world can emit while still having a likely chance of limiting global temperature rise to 2°C above pre-industrial levels. The international scientific community estimates this budget to be 1 trillion tonnes of carbon (1,000 PgC).*



2°C

The 2°C target has been adopted by the countries within the United Nations Framework Convention on Climate Change (UNFCCC).



Com estar dins del pressupost?

HOW CAN WE STAY WITHIN THE BUDGET?

While the world is not on track to limit warming to 2°C, it can still get there with the right amount of ambition. Sticking to the budget can protect communities around the world from some of the most dangerous impacts of climate change. **We can stay within the budget by:**



Making existing commitments

Many countries have already made emissions-reductions pledges to the UNFCCC. Fully implementing those plans will reduce global emissions 5-12 percent below business-as-usual trajectories by 2030.



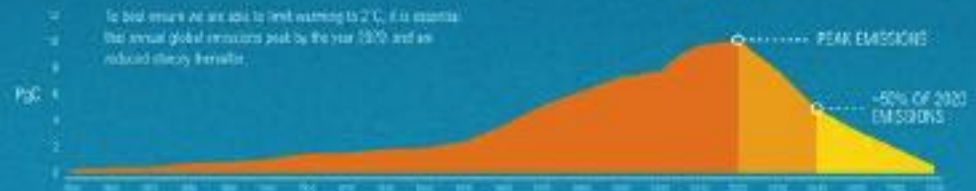
Pursuing renewables Countries must pursue greater reductions. Adopting initiatives that improve energy efficiency, promote local fuel switches, reduce short-lived climate pollutants like methane, and increase renewable energy hold some of the greatest potential.



Phase-out coal Global emissions must peak by 2020 and then steadily decline in order to cost-effectively meet the 2°C target. Countries should keep this target in mind when pursuing low-emissions-renewable plans.



Oil and gas that stays in the ground Carbon dioxide emissions associated with coal, oil, and gas reserves are 1.6 trillion metric tons. Roughly three-quarters of those fuels must remain in the ground in order to stay within the carbon budget.



LEARN MORE HERE

Quantifying the carbon budget was one of the biggest findings to come out of the recent IPCC report. Learn about some of the other findings—and their implications—by going to our website: wri.org/ipcc-infographics.

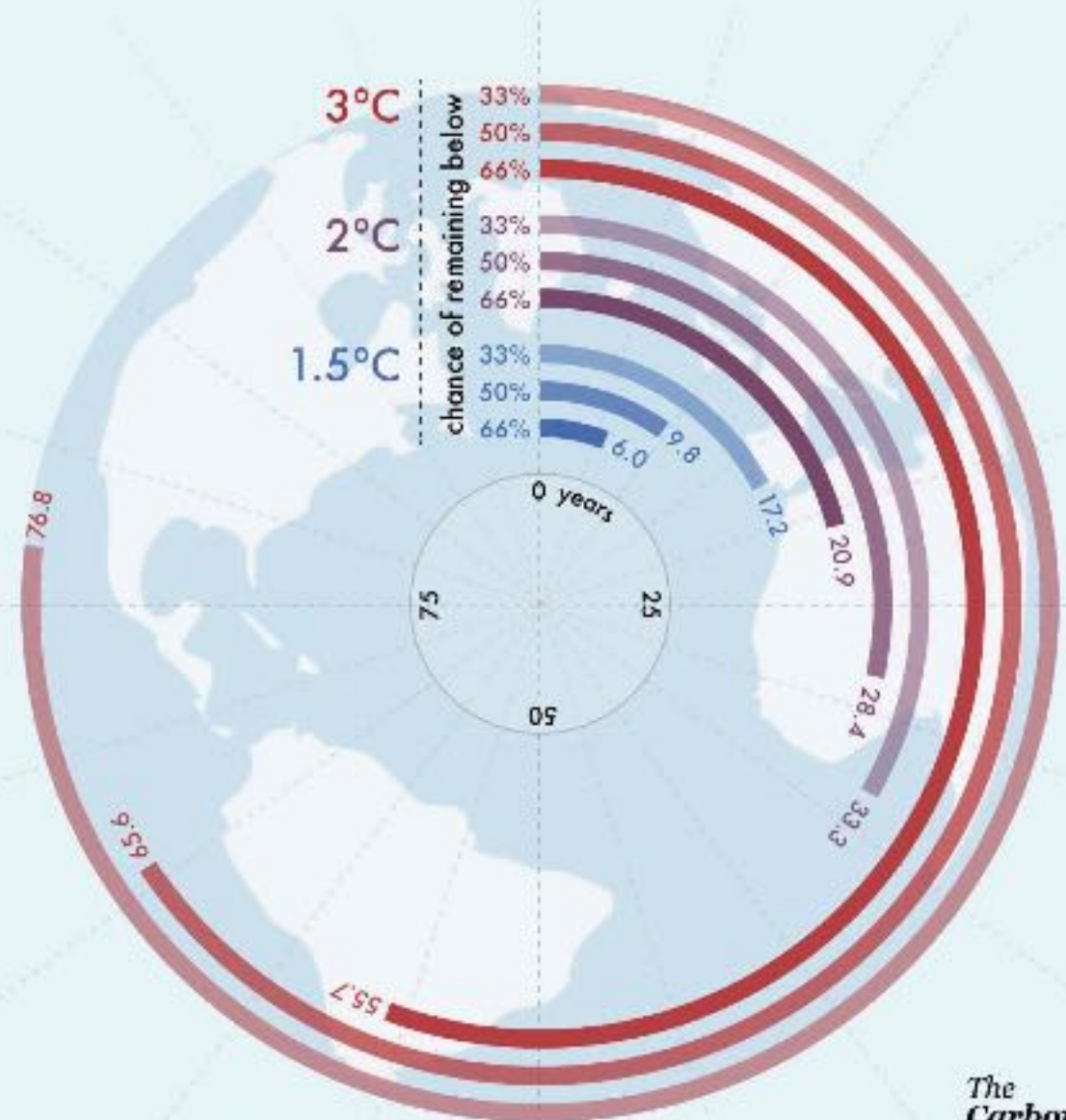
* When other greenhouse gases beyond carbon dioxide are taken into account, the budget is reduced further and that budget may depend on the scenario studied. For example, according to one scenario studied in the IPCC AR5 (RCP 2.6), when non-CO₂ greenhouse gases are considered, the budget drops much lower to 750 GtCO₂e. This would result in only a 10-year budget of only 201 GtCO₂e and an exhaustion of the budget in less than two decades if carbon dioxide emissions increase at a carbon-intensive rate.

Charts and source materials can also be found at wri.org/ipcc-infographics.

El compte enrere del Carboni

Carbon Countdown

How many years of current emissions would use up the IPCC's carbon budgets for different levels of warming?



<http://bit.ly/carboncountdown>

The
Carbon
Brief

SIGN UP TO OUR NEWSLETTER

Keyword

The \$2 trillion stranded assets danger zone

The \$2 trillion stranded assets danger zone: How fossil fuel firms risk destroying investor returns

READ THE NEW REPORT

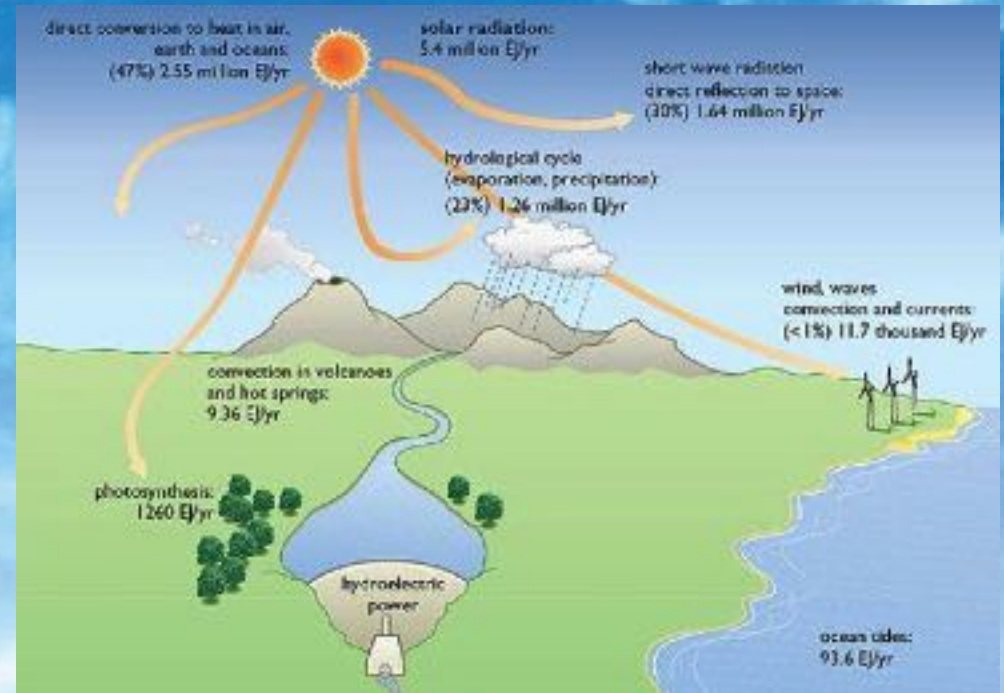


De l'era del foc



. . . . a l'era dels fluxos

- Avui tenim l'oportunitat de disposar d'energia sense necessitat de la combustió ni de la fissió de materials



Sabrem aprofitar-la?

Les emissions de CO₂

$$\begin{aligned} & \text{CO}_2 \\ & = \\ & \text{persones} \\ & * \\ & \text{serveis/persona} \\ & * \\ & \text{energia/servei} \\ & * \\ & \text{CO}_2/\text{energia} \end{aligned}$$

Disposar d'energia: tecnologia

Be comú
natural

- Renovable
- No Renovable

→ Aprofitament → Servei



Tecnologia



Potencial humà

Apropiació social de la tecnologia

- Automoció



- Càlcul



- Telefonia



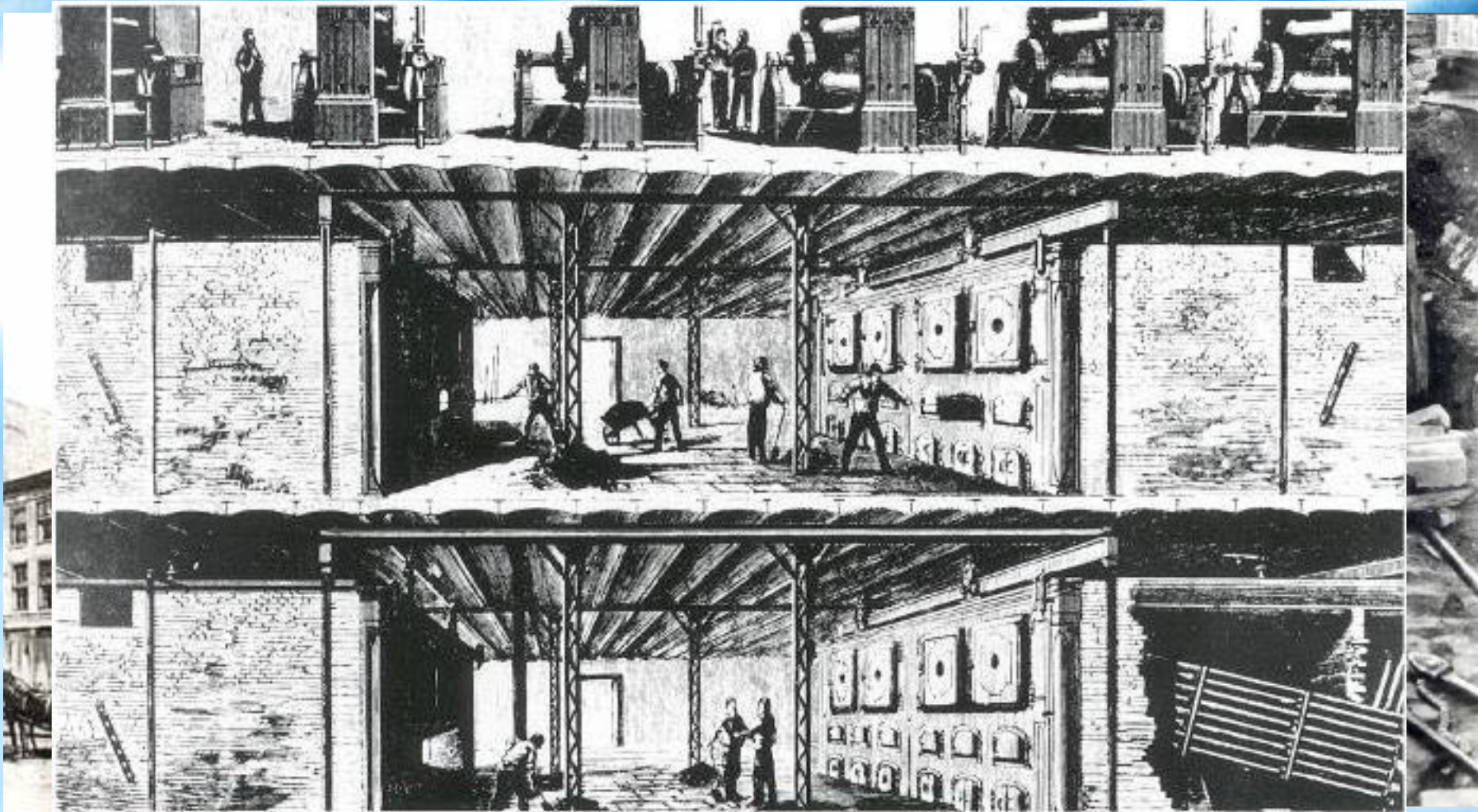
Apropiació social de la tecnologia

- Agricultura



La tecnologia de generació d'electricitat

- Generació centralitzada (segle XX)



Empresa i energia

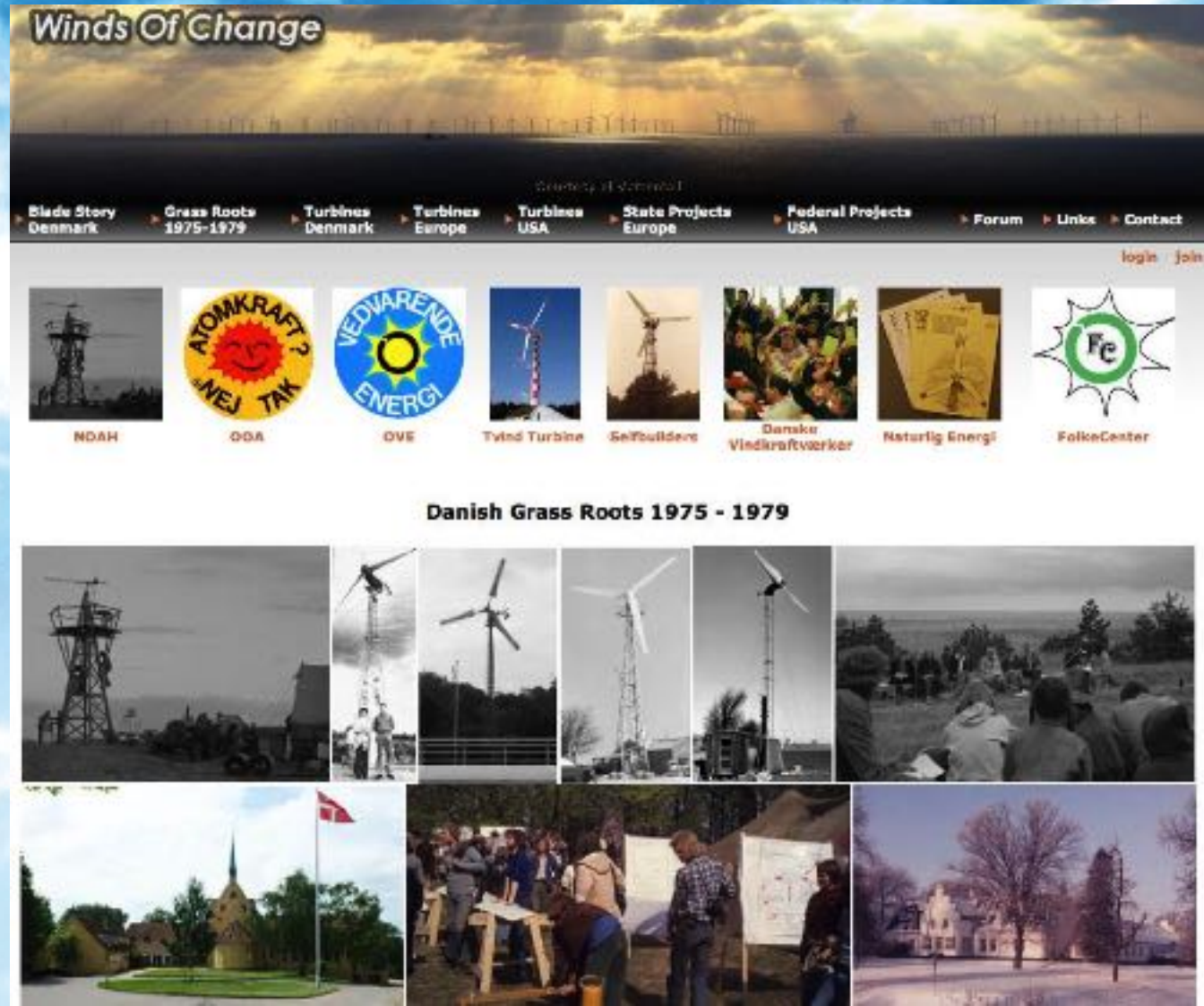
- Les empreses tenen dues oportunitats:
 - 1) obtenir energia *in situ* per cobrir les seves pròpies necessitats quotidianes
 - i 2) obtenir energia *in situ* per cobrir necessitats foranes

L'apropiació social de la tecnologia solar



Apropiació social de l'eòlica: Dk

- L'eòlica moderna neix a Dk fruit d'un moviment popular







Danish electricity production



Big power stations



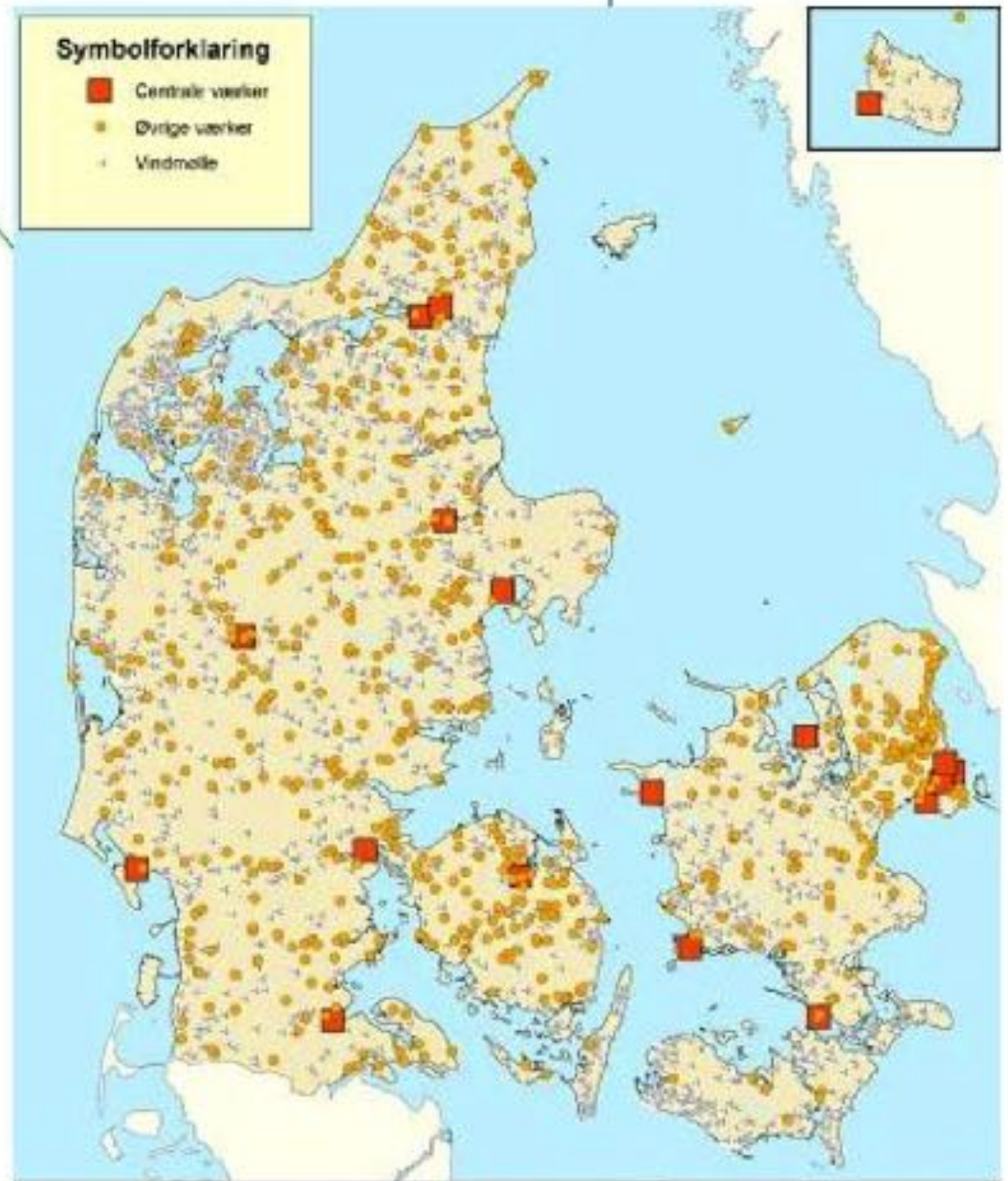
Small CHP plants

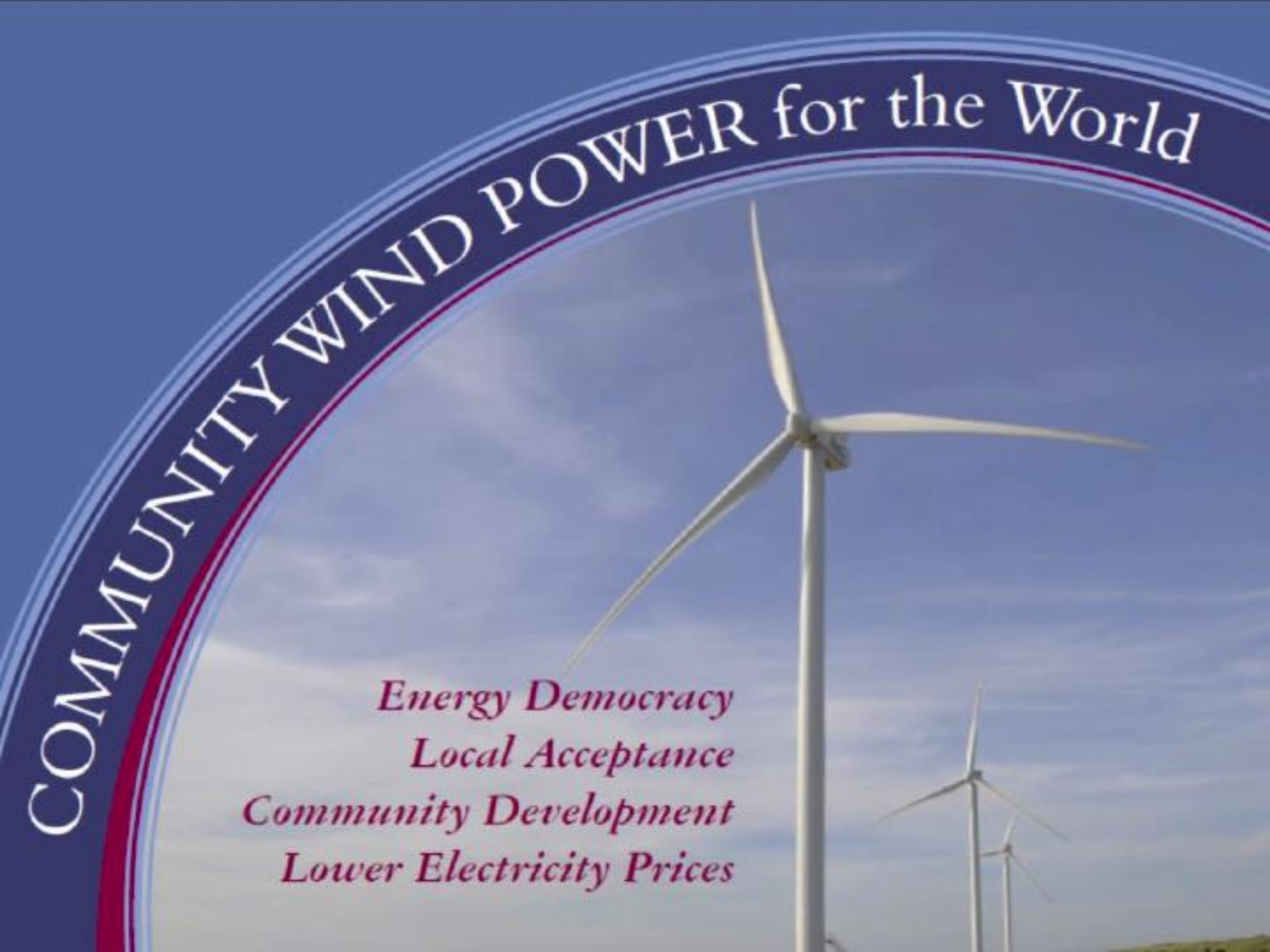


Wind turbines

Symbolforklaring

- Centrale værker
- Øvrige værker
- ⋄ Vindmølle





COMMUNITY WIND POWER for the World

- Energy Democracy*
- Local Acceptance*
- Community Development*
- Lower Electricity Prices*

Not 20% - but 100% local ownership as the alternative to external investors.

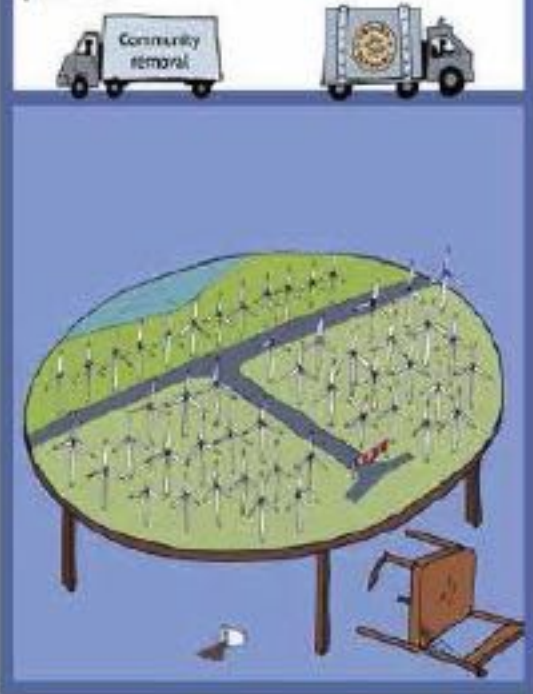
Citizens take matters in their own hands! Locally owned energy production will bring development and generate income for the local community.



OPTION 1.



People abandon their land and move away. Money flows to investor's pocket.



OPTION 2.

**Real World Example:
Hvide Sande, fishery harbour Denmark:
100% local acceptance**



L'apropiació social de la tecnologia eòlica

Germany leads on community energy projects

Washington (jrh) According to a US study, German citizens invest more money in renewable energy projects than people in any other country in the world. While China and the US lead the way in terms of total investment in clean energy, research by Bloomberg New Energy Finance shows that the people of Germany have spent almost EUR 11.5 billion on micro-projects – that is, systems with an output of less than one megawatt. Italy is in second place at EUR 10.5 billion, with Japan close behind at EUR 9.8 billion. Community energy projects play only a minor role in the US, where the investment volume is equivalent to just under EUR 5 billion.

Venture capital investors dominate the German renewables sector, which still attracted EUR 27.2 billion in 2012. Only China bettered this result with almost EUR 50 billion. In line with this, China also holds first place in terms of installed renewable capacity at 152 gigawatts (GW). The US has 133 GW, while Germany is in third place with 71 GW.



Wind farms are seen as a good investment in Germany. This community-owned wind farm in Lorup in northwest Germany was set up in 2001.

Distefano Technology & Manufacturing blog

Browse: [Home](#) > [2016](#) > [April](#) > [13](#) > [Could Factories Ever Become Powered By 100% Renewable Energy?](#)

COULD FACTORIES EVER BECOME POWERED BY 100% RENEWABLE ENERGY?

April 13, 2016 - by Editor - in Blog

From small plants to large, models for factories these days often involve eco-friendly measures. Possibly the world's most famous factory, the [Tesla Gigafactory](#) (unveiled just a few weeks ago) is a large-scale implementation of sustainability. As the largest extant lithium-ion battery factory, the factory is expected to generate as much renewable energy as it needs to operate. As [ComputerWorld](#) documents, "using conservative estimates, the Gigafactory's trifecta of renewable energy sources could generate more than 2,00MWh of renewable electricity daily, 20% more than it even needs."



The factory will be shaped like a diamond so that it fits the environment and less dirt has to be removed to build it. CEO [Elon Musk](#) says that the factory is aligned on true north so that it will have the maximum amount of light for its solar panels: "This factory will produce its own energy as well. Through a combination of geothermal, wind, and solar, it will produce all the energy it needs. So it'll be a self-contained factory."

TWITTER STREAM

What Advanced Manufacturing Institutes Do, and Why They Matter:

[dtamfg.socialmediacontractors...](#)
[#advancedmfg](#)

About 2 years ago from Distefano Mfg's Twitter via [SocialReport.com](#)

[Follow @distefano_mfg](#) 4,498 followers

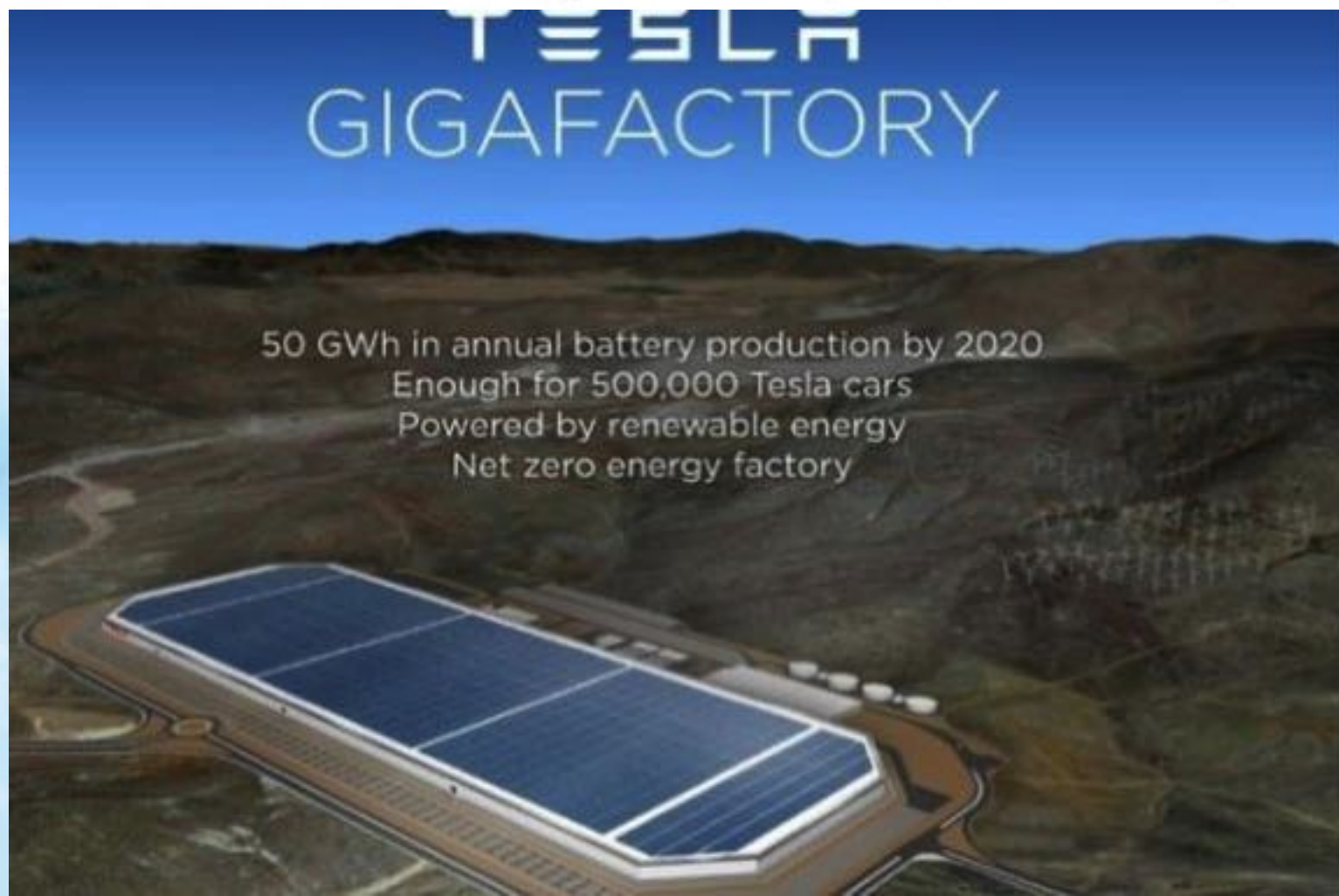
Search



NEWS

If Tesla's Gigafactory can run on 100% renewable energy, why can't others?

Tesla's trifecta of renewable energy sources is likely to surpass its electricity needs



The Wakefield solar farm

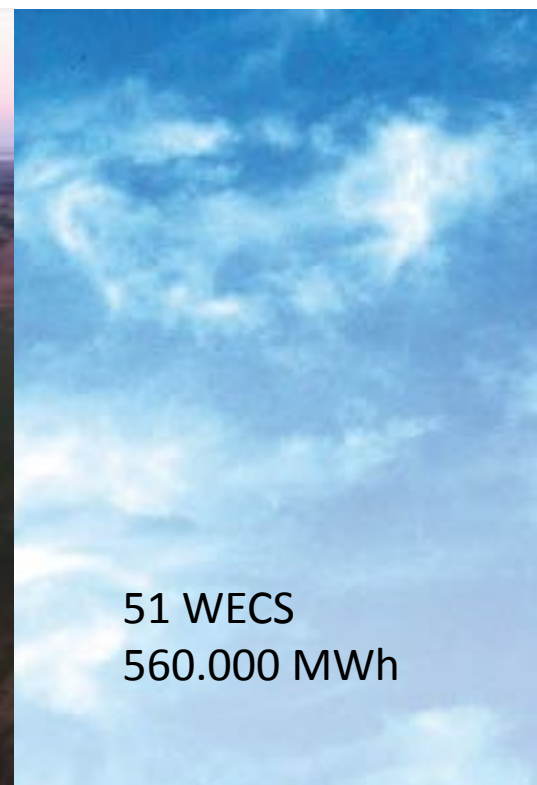


The farm in all its glory

We're very happy to announce that all production in Coca-Cola European Partners' (CCEP) factories in Great Britain is now powered by 100% renewable electricity. This is partly due to a brand new solar farm near their factory in Wakefield. Here's how they achieved this goal and why local heroes were key in making it happen.

Energy

Apple wind farm in Oregon will use 51 Vestas turbines



51 WECS
560.000 MWh

The wind farm in Oregon's Columbia River Gorge that will serve as Apple Inc.'s single biggest source of renewable energy will use turbines made by Vestas Wind Systems.

GM factories power towards 100 percent renewable energy sources

BY KAREN GRAHAM SEP 20, 2017 IN BUSINESS

[LISTEN](#) | [PRINT](#)

All General Motor's Ohio and Indiana manufacturing facilities will soon meet their electricity needs with 100 percent renewable energy, thanks to GM's new purchase of 200 MW of wind power, it was announced on Wednesday.



DAVEY ALBA BUSINESS 02.17.15 05:16 PM

GM WILL SOON USE WIND TO POWER ITS FACTORIES



Texas General Motors factory commits to wind energy

G.M. aims to make an SUV plant in Arlington, Texas, 100-percent wind-powered by 2018.

01 : 30
MIN SEC

 Texas factory commits to wind energy. GM aims to make an SUV plant in Arlington, Texas, 100 percent wind powered by 2018.

00:00:00 



By [Bruce Lieberman](#)

Friday, February 17, 2017

TOPICS
[Energy](#)

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- [This woman uses virtual reality to teach climate](#)



The General Motors plant in Arlington, Texas makes more than 1,000 SUV's a day.

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Ziploc Bag Factory Now Powered by 100% Wind Energy

June 2, 2017

Power-technology.com reports that S.C. Johnson's Ziploc bag manufacturing facility in Michigan is now powered by 100% wind energy. The factory receives electricity from nearby wind farms. S.C. Johnson has been using renewable energy at its global sites since 2004 and commissioned two wind turbines at a Wisconsin manufacturing facility in 2012.

US-based SC Johnson's bag manufacturing facility in Michigan, is now completely powered by wind energy.

The Ziploc brand bag manufacturing facility receives electricity from nearby windfarms, joining two other SC Johnson facilities that fully operate on clean energy.



2 WECS
8.000.000 kWh

[Alternative Energy](#) ▾ [International](#) ▾ [Wind Power](#)

FORD PLANT IN THE UNITED KINGDOM IS NOW 100% WIND POWERED

by [Andrew Meggison](#) | August 22, 2011 | 1 comment



Ken Macfarlane, Vice President of Manufacturing for Ford of Europe, said:

“ Since 2000, we have reduced our global operational energy use by 30 percent and CO2 emissions from our facilities by 39 percent. Globally Ford is committed to continue leading the way in environmental responsibility, whether with the vehicles and powertrains we make or through the processes we use to make them.

Apple to power Oregon data center with wind energy

April 26, 2017 [Michelle Froese](#) : 0 Comments



To help power its Oregon data center, Apple recently signed an agreement to purchase power from the 404-MW Montague Wind Farm.

Apple recently disclosed a deal to purchase 200 MW of wind power from the Montague Wind Farm for its Prineville, Oregon data center. The news was announced in the company's [annual environmental responsibility report](#), and it is being dubbed as the "first Apple-created wind project."

Construction on the first phase of the Montague Wind Power Project is scheduled to begin in September, with energy generating late next year. The 404-MW wind farm is owned by Montague Wind Power Facility, a wholly owned subsidiary of Avangrid Renewables LLC, and it will be capable of producing 560 million kWh annually.

According to the Oregon Department of Energy, the Montague Wind Facility will be located in Gilliam County,

Oregon, in the high desert east of the Cascade Mountains nearby several other wind projects.

In a separate announcement, Apple maintains it has plans to buy power from a 56-MW project called Solar Star Oregon II, under construction a few miles from the Prineville complex. Two micro-hydro projects, generating 12 million kWh of energy per year, are also powering the data center.

Shares





Apple Finally Jumps on the Wind Power Bandwagon

By Greg Alvarez

Over the past few months, we've seen big wind energy investments from the likes of GM, Facebook, Home Depot and others. But one of the world's largest companies and leading proponents of doing business using 100 percent renewable energy, has been conspicuously absent: Apple.

Apple's Oregon wind farm cleared for super-sized turbines

Jul 18, 2017, 2:36pm PDT Updated: Jul 18, 2017, 3:19pm PDT

Regulators have cleared Apple's Oregon wind power project to use the biggest turbines ever deployed in the Pacific Northwest.

Project developer Avangrid Renewables said it hasn't made a final decision on the machines it will use at the Montague Wind Power Facility, but regulators last week granted a site-certificate amendment that allows for turbines with rotor diameters of 136 meters and generating capacities of 3.6 megawatts.

The biggest turbines in the region now top out around 100 to 110 meters in rotor diameter and 2.5 megawatts in generating capacity.

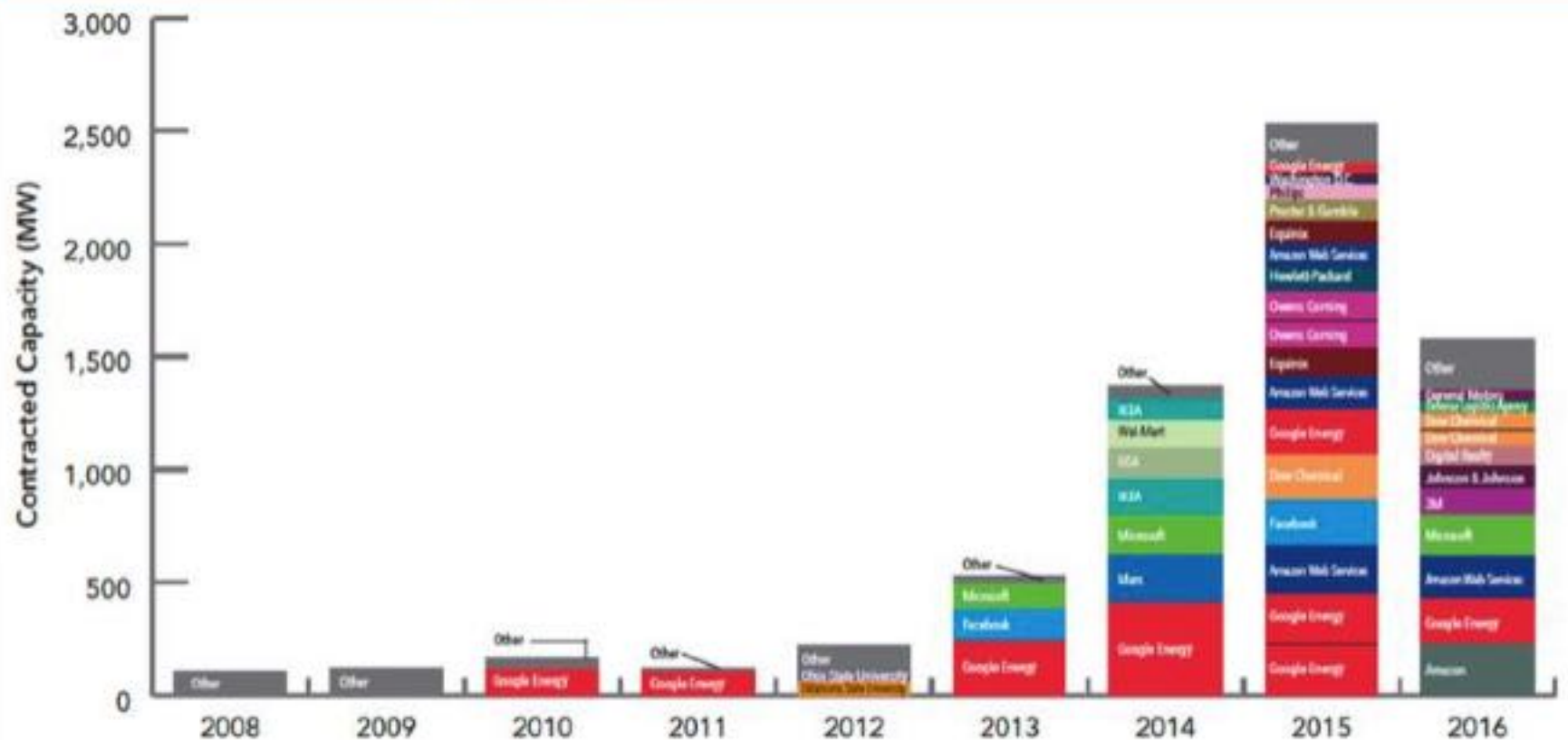


MICHAEL SHORT/BLOOMBERG

Cupertino, Calif.-based Apple Inc. is aiming to power 100 percent of its global facilities with renewable sources.

In 2016, Fortune 500 companies and other non-utility customers signed 39 percent of the capacity contracted through wind power purchase agreements and their strong interest in wind has continued into 2017.

Non-Utility Wind Power Purchases, by Year



Note: Data include publicly announced physical and virtual power purchase agreements (PPA), direct ownership of onsite or offsite wind projects, and large-scale REC purchases associated with specific wind projects. Data is recorded at the time of announcement and does not indicate when the associated wind project is placed into operation.



viure de l'aire

EOLPOP

Antecedents

- 10/3/2009: 25è aniversari de la posada en marxa del 1er aerogenerador català modern, connectat a la xarxa:
 - Eurosolar Catalunya llença una iniciativa, pionera a casa nostra: **instal·lació d'un aerogenerador**
 - en un indret escaient,
 - **de propietat compartida** entre la ciutadania que voluntàriament aporti els diners necessaris per poder fer realitat el projecte.



Antecedents

- Projecte **Viure de l'aire del cel**
 - Rep el suport d'una dotzena d'entitats
 - Divulgada a partir de 2009 per BarnaGEL – Barcelona Grup d'Energia Local
 - Recull gairebé un centenar d'inscripcions de participants i un compromís d'aportació de quasi 500.000 €



L'empresa eòlica popular

- **Eolpop S.L.**

- 28/10/2009: 4 persones constitueixen una petita empresa per dur a terme el projecte:

- Cercar d'un emplaçament adient (bon vent, fàcil accés i proximitat a la xarxa elèctrica de mitja tensió),
 - Encarregar el projecte
 - Signar un acord amb els propietaris del terreny
 - Signar un acord amb l'Ajuntament
 - Escollir el model d'aerogenerador i signar el contracte de compra amb el fabricant



L'empresa eòlica popular

- **Eolpop S.L.**
 - Establir el procediment per fer possible la participació ciutadana en la propietat de l'aerogenerador:
 - Emetre els contractes de comptes de participació (el mateix model emprat en el projecte d'Ona Solar)

Mercat del Carmel, Bcn, 12/5/2006



El projecte Viure de l'aire del cel

- Objectiu
 - Instal·lar un aerogenerador de **propietat compartida**, que permeti generar **electricitat neta i 'verda'**, tot fent possible la **solidaritat** entre les persones que viuen a zones urbanes (disposen de capital financer: diners) i les que viuen a zones rurals (disposen de 'capital' natural: vent)



El projecte Viure de l'aire del cel

- Objectiu addicional
 - Fer possible que les persones, famílies i entitats puguin manifestar obertament que **l'energia que utilitzen en la seva vida quotidiana és 'verda' i neta** (lliure d'emissions de CO₂) generada en l'emplaçament on hi ha instal·lat l'aerogenerador



El projecte Viure de l'aire del cel

- El cost d'instal·lació i posada en funcionament és cobreix amb la participació de la gent:
 - Accionariat popular, tant de persones i/o famílies que viuen en entorns urbans com rurals, com d'entitats sense ànim de lucre i petites empreses.
 - Tenen prioritat les persones i/o famílies que visquin a l'entorn o a prop de l'emplaçament.



El projecte Viure de l'aire del cel

- L'emplaçament
 - dins el terme municipal de Pujalt (Alta Anoia):
 - Bones condicions eòliques, d'accés i de connexió a la xarxa de mitja tensió
 - Bona disposició de:
 - l'Ajuntament
 - els propietaris
 - el veïnat



Situació



Emplaçament



Emplaçament



Parcel·les afectades



Genera la teva pròpia energia.

EOLPOP

El projecte Viure de l'aire del cel

- La màquina eòlica
 - Enercon E-103 EP2:
 - Característiques:
 - Classe III-A (IEC/EN-61400-1)
 - 2,35 MW de potència
 - 103 m de diàmetre
 - Torre de 85 metres



ENERCON
ENERGY FOR THE WORLD

Data Sheet
Weights and Dimensions E-103 EP2-ST-85-FB-C-01

Tab. 1: Heights, wind zones, type

Parameter	Value
Total height above ground level	136.00 m
Hub height above ground level	84.58 m
Hub height above foundation top edge	84.43 m
Tower height above foundation top edge	82.99 m
Wind zone (DIN 2017)	W7 ? GK I, GK II
WTC (IEC 61400-1:2010)	WTC IIA
Type	Steel tower
Number of steel sections	5

W.Z. Windzone (wind zone)
GK. Geländekategorie (terrain category)
WTC. Wind Turbine Class

Tab. 2: Dimensions and weights

	Length	Diameter		Mass
	/m/m	D_{out} /in/in	D_{inner} /in/in	
Steel section 1	28.48	2.25' 2.49'	2.85	44
Steel section 2	24.01	2.86	3.48	67
Steel section 3	16.14	3.48	3.95	60
Steel section 4	11.33	3.95	4.30	62
Steel section 5	3.00	4.30	4.60/ 4.90'	21
Foundation base	1.80	4.90'	4.00'	10
Total tower mass				262

¹ Outer flange diameter
² Outer loading diameter

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Producció

Energy Yield Calculation E-103 EP2 2350 kW OM0s



Power Curve Reference: D0438737-1_#_en_#_Betriebsmodi_E-103_EP2_2350_kW_mit_TES

PROJECT DATA:

Project Name: Viure de l'aire

Site Name: Pujalt

Annual Energy Production according to $\rho = 1.16 \text{ kg/m}^3$

W: 5 818 531 [kWh/a]

Average Wind Speed in Hub Height

v_h : 6.00 [m/s]

WEC-DATA:

Rated Power P_n : 2 350 [kW]

Rotor Diameter D_r : 103.0 [m]

Hub Height H_h : 98.0 [m]

Swept Area A_r : 8 332.3 [m²]

METEOROLOGICAL DATA:

Modified Air Density ρ : 1.160 [kg/m³]

Shear Factor α : 0.18 [-]

Reference Height H_x : 89.0 [m]

Scale Parameter A: 6.77 [m/s]

Wind Reference Height v_x : 5.90 [m/s]

Form Parameter k: 2.00 [-]

Calculated by: Rosario Llorente

WEC-Marking:

E-103 EP2

ENERCON's new E-103 EP2 / 2.35 MW utilizes wind resources at low wind sites to the fullest.



Overview of technical data



Complete view

Genera
la teva pròpia
energia.



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Genera
la teva pròpia
energia.



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EOLPOP S.L.





Genera
la teva pròpia
energia.

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ENERGIA VERDE



Suelo vegetal

Limos

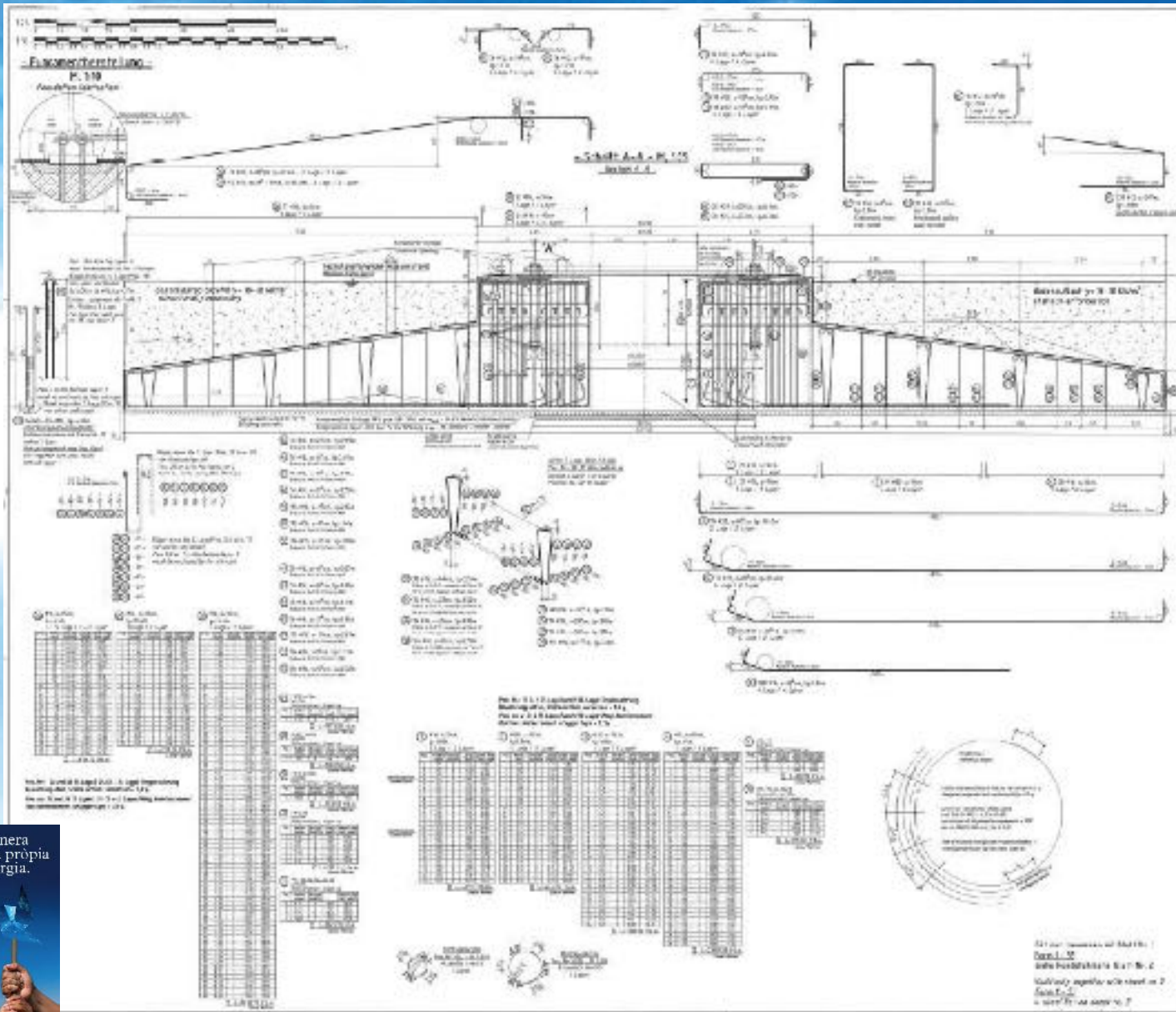
Calizas grises

Calizas gris-rojiza

Arcillita ST2

Genera
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energia.

EOLPOP
ENERGÍA OLÉICA DE LAS ISLAS BALEARES



Item	Quantity	Weight	Volume
1. Reinforcement of the tower wall	1000	1000	1000
2. Reinforcement of the tower floor	2000	2000	2000
3. Reinforcement of the tower roof	3000	3000	3000
4. Reinforcement of the tower base	4000	4000	4000
5. Reinforcement of the tower top	5000	5000	5000
6. Reinforcement of the tower middle	6000	6000	6000
7. Reinforcement of the tower bottom	7000	7000	7000
8. Reinforcement of the tower upper	8000	8000	8000
9. Reinforcement of the tower lower	9000	9000	9000
10. Reinforcement of the tower inner	10000	10000	10000
11. Reinforcement of the tower outer	11000	11000	11000
12. Reinforcement of the tower center	12000	12000	12000
13. Reinforcement of the tower edge	13000	13000	13000
14. Reinforcement of the tower corner	14000	14000	14000
15. Reinforcement of the tower joint	15000	15000	15000
16. Reinforcement of the tower connection	16000	16000	16000
17. Reinforcement of the tower support	17000	17000	17000
18. Reinforcement of the tower foundation	18000	18000	18000
19. Reinforcement of the tower structure	19000	19000	19000
20. Reinforcement of the tower system	20000	20000	20000

Table of Reinforcement Data:

Reinforcement	Quantity	Weight	Volume
1. Reinforcement of the tower wall	1000	1000	1000
2. Reinforcement of the tower floor	2000	2000	2000
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Genera
la teva pròpia
energia.



EOLPOP
Energia eólica



Genera
la teva pròpia
energia.



EOLPOP
Energia
Limpia



Genera
la teva pròpia
energia.



EOLPOP
Energia Oberta i Lliure

The advertisement features a hand holding a small wind turbine model against a blue sky background. The text 'Genera la teva pròpia energia.' is at the top. The EOLPOP logo and tagline 'Energia Oberta i Lliure' are at the bottom.



Genera
la teva pròpia
energia.



EOLPOP
EOL POP



Genera
la teva pròpia
energia.



EOLPOP
Energia Oberta i Lliure



Genera
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energia.



EOLPOP
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energia.



EOLPOP
Energia Oberta i Lliure



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EOLPOP
EN 100%



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energia.



EOLPOP
Energia. Energia. Energia.



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la teva pròpia
energia.

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Energia Oberta i Lliure



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energia.



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energia.



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Energia Oberta i Lliure



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energia.



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Energia Oberta i Lliure



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Energia Oberta



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la teva pròpia
energia.



EOLPOP
Energia Oberta i Lliure

El projecte Viure de l'aire del cel

- Cost del projecte¹:
 - Aerogenerador: 2.230.000 €²
 - Total (A+I+prom+proj): 3.050.000 €³

- Costos unitaris:
 - Aerogenerador: 948 €/kW
 - Total (A+I+prom+proj): 1.298 €/kW

1 (costos, des.2016)

2 (inclou fonaments)

3 (sense IVA)



El projecte Viure de l'aire del cel

- Opcions per a la participació
 - Qui pot participar?
 - qualsevol persona física de forma individual, o grup de persones (família),
 - qualsevol entitat sense ànim de lucre o petites empreses
 - Tot-hom que vulgui contribuir a la **democratització dels sistemes energètics (apropiació social de la tecnologia)**
 - Com?
 - Aportant la quantitat de diners que correspongui per disposar del nombre de participacions que decideixi



El projecte Viure de l'aire del cel

- Opcions per a la participació
 - Inversió mínima:
 - la necessària per generar 1.000 kWh/any d'electricitat neta i 'verda' amb l'E103 en l'emplaçament triat
 - Inversió recomanada (3 opcions):
 1. Per cobrir les necessitats d'electricitat
 2. Per cobrir les necessitats d'electricitat i combustible
 3. Per cobrir les necessitats d'electricitat, combustible i carburants



El projecte Viure de l'aire del cel

- Opcions per a la participació
 - Exemple:
 - Família amb unes necessitats anuals d'energia de 20.950 kWh:
 - Electricitat: 3.100 kWh_{el} (862 kg CO₂)
 - Combustibles: 7.850 kWh_{th} (1.562 kg CO₂)
 - Carburants: 10.000 kWh (2.527 kg CO₂)
 - Inversió recomanada:
 - Electricitat: 1.537 €
 - Combustibles: 3.893 €
 - Carburants: 4.959 €
 - El.+Com.+Car.: 10.389 €



El projecte Viure de l'aire del cel

- Estat actual del projecte:
 - Tardor 2011: s'encomana redacció projecte
 - Març 2012: entrada del projecte a la OGE
 - Novembre 2012: la ponència ambiental de parcs eòlics aprova el projecte amb 9 condicions addicionals, entre elles estudi d'impacte acústic i d'afectació patrimoni cultural i paisatgístic
 - Novembre 2013: la Comissió d'Urbanisme de la Catalunya Central acorda aprovar el projecte
 - Febrer 2014: l'AESA autoritza la instal·lació de l'aerogenerador condicional a la senyalització
 - Abril 2016: el Departament d'Empresa i Coneixement de la Generalitat de Catalunya autoritza el projecte
 - Tardor 2016: es comença a treballar en l'execució del projecte
 - Tardor 2017: instal·lació de l'aerogenerador
 - Hivern 2017: a punt de començar a funcionar
 - 13/3/2018: inici de funcionament



El projecte 'Viure de l'aire del cel'
compta amb el suport de:



Apropiació social de la tecnologia eòlica



El projecte Viure de l'aire del cel

- El projecte VIURE DE L'AIRE DEL CEL és una contribució:
 - A la **Democratització** de l'energia
 - Un exemple d'apropiació social de la tecnologia
 - A la **Independència** energètica
 - Un exemple del nou sistema energètic a construir
 - A la **reducció de les emissions** de CO₂
 - Un exemple de com la ciutadania pot contribuir a la reducció de les emissions de CO₂



COMMUNITY WIND

Locally owned wind turbines can provide your community with greater energy security, create jobs, keep more energy dollars circulating in the local economy and provide a hedge against potentially high energy costs in the future.

by GREG FAMIL

Illustrations by MARK HERMAN

SUPPORTED POWER

Perhaps you'd like to have a wind turbine in your back yard, but for one reason or another, your property just doesn't have a good wind source. Don't despair, because someone else in your community might have an excellent site to put one or more turbines, where the wind always comes in from the same direction. And if you can attract enough support from area residents, you may be able to install a turbine or two on a nearby, privately owned wind turbine project that benefits everyone in the community. Impossible? Not at all. In fact, this strategy has been used successfully for many years in Europe, and is the very foundation of the Danish wind industry, long recognized as a world leader in the wind sector.

During the OPEC (Organization of Petroleum Exporting Countries) oil embargo and subsequent oil crisis of the 1970s there was a flurry of wind turbine activity in the United States, and some significant advances were made in the technology. But in the early 1980s, when the Reagan administration threatened the energy tax credits and incentives that had encouraged the installation of alternative energy systems nationwide, the U.S. wind power industry collapsed.

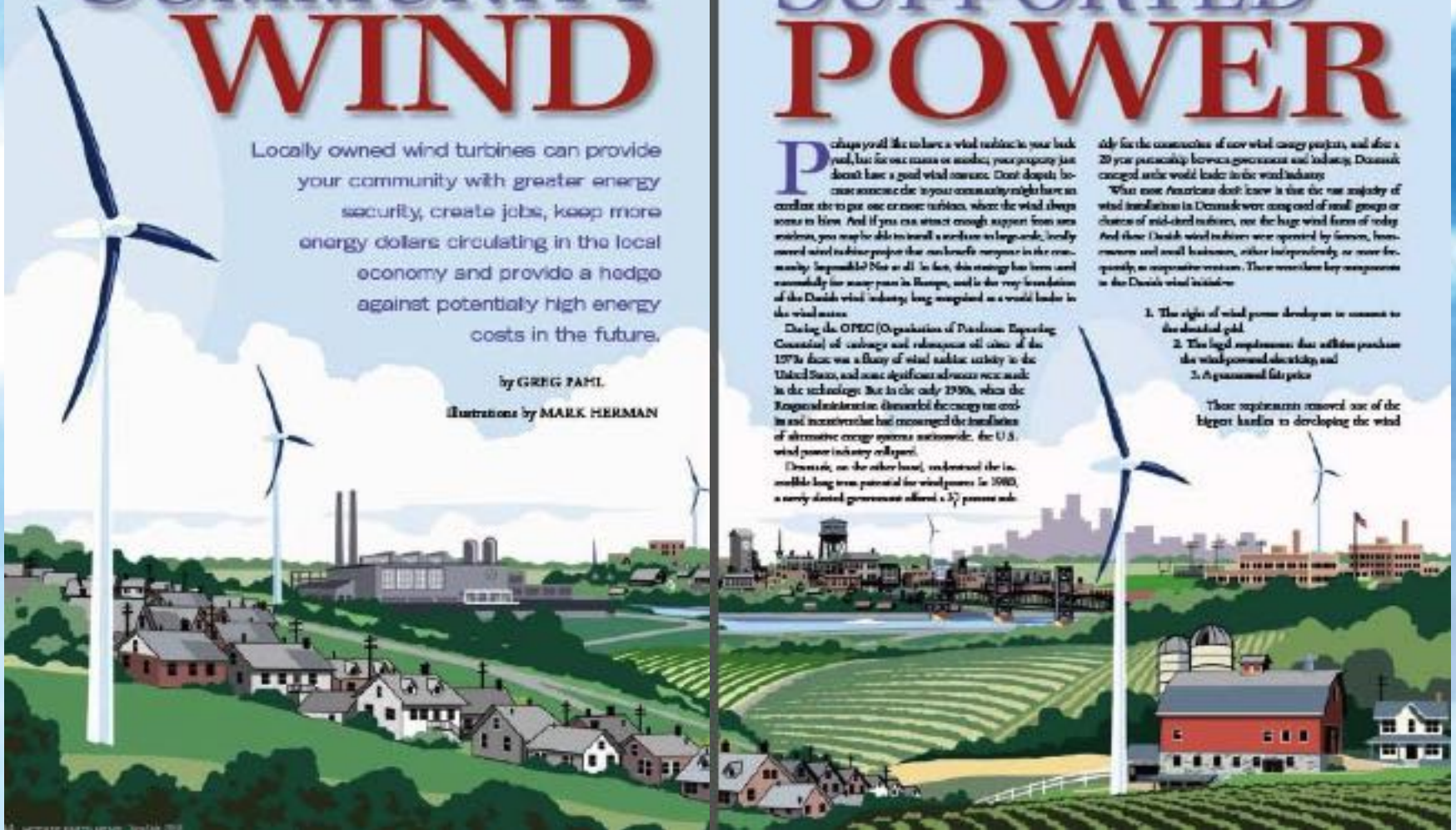
Denmark, on the other hand, recognized the incredible long term potential for wind power. In 1980, a newly elected government offered a 3% percent sub-

sidy for the construction of new wind energy projects, and also a 20 year partnership between government and industry. Denmark emerged as the world leader in the wind industry.

What most Americans don't know is that the vast majority of wind installations in Denmark were using wind of small groups or clusters of wind-turbine turbines, not the large wind farms of today. And these Danish wind turbines were operated by farmers, homeowners and small business, either independently or more frequently in cooperative ventures. These were the key components in the Danish wind industry.

1. The right of wind power developers to connect to the electrical grid.
2. The legal requirement that utilities purchase the wind-generated electricity, and
3. A guaranteed fair price.

These requirements removed one of the biggest hurdles to developing the wind





© Energiegenossenschaft Starlensburg eG

German energy transition is a democratic movement

Ownership of renewables in 2012

Si

Citizens form cooperatives to drive the energy transition

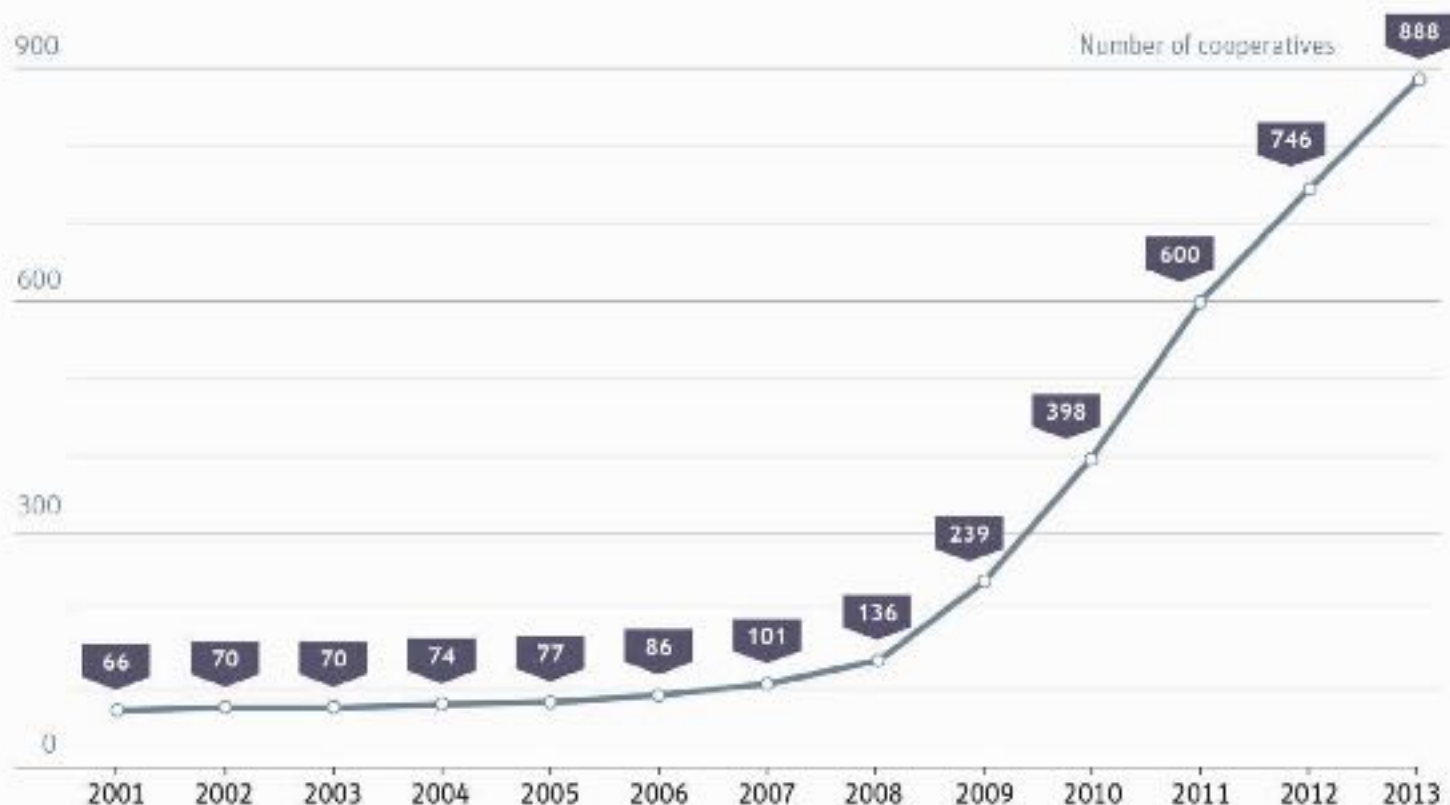
Number of energy cooperatives in Germany, 2001-2013

Source: www.unendlich-viel-energie.de

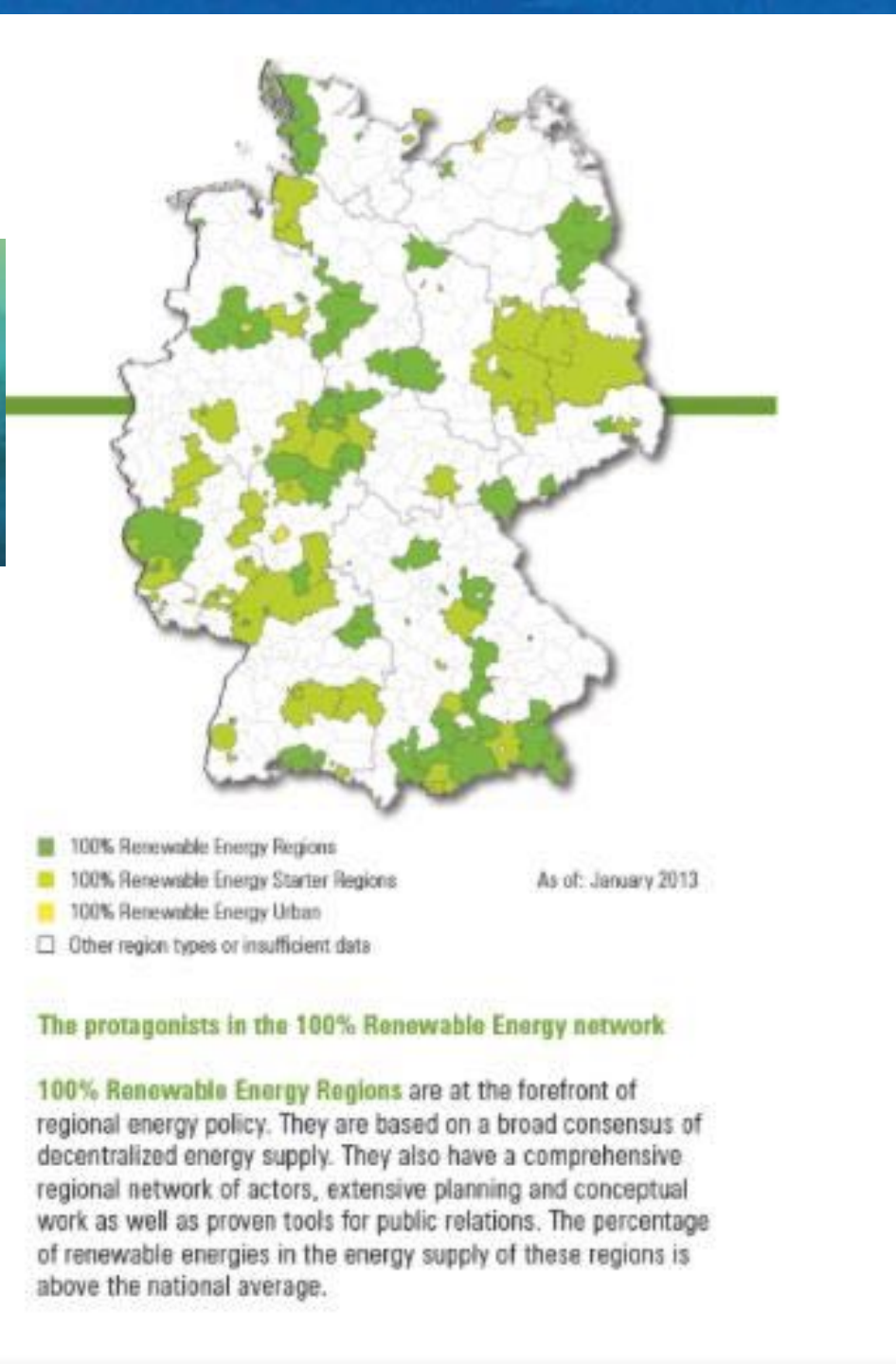


E
1

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a
4



ops
7%



The protagonists in the 100% Renewable Energy network

100% Renewable Energy Regions are at the forefront of regional energy policy. They are based on a broad consensus of decentralized energy supply. They also have a comprehensive regional network of actors, extensive planning and conceptual work as well as proven tools for public relations. The percentage of renewable energies in the energy supply of these regions is above the national average.

German Energy Transition
Arguments for a renewable energy future

By Craig Morris, Martin Pehnt

An initiative of the Heinrich Böll Foundation
Released on 28 November 2012

www.energytransition.de

POWER TO THE PEOPLE

Do big multinationals really own energy? Can communities take control over what should belong to them?



Part of

**CO-OPERATIVES
UNITED** / WORLD FESTIVAL
AND ICAEXPO

29 OCT—2 NOV 2012
MANCHESTER CENTRAL, UK

El projecte Viure de l'aire del cel

Què és Eolpop El projecte Entitats col·laboradores Informació Participa-hi Contactar



Ja et pots preinscriure per participar en el projecte!



Què és Eolpop

El 10 de març de 2009 es va commemorar el 25è aniversari de la inauguració pública del primer aerogenerador modern connectat a la xarxa a Catalunya. Per celebrar...

El projecte

L'objectiu principal del projecte Viure de l'aire del cel és instal·lar un aerogenerador de propietat compartida, que permeti generar electricitat neta i verda, tot fent...

Seguiràs igual?

Dóna el primer pas per canviar el model energètic.

Participa en el funcionament del primer aerogenerador comunitari i compensa les teves emissions de CO₂.

PASSA A L'ACCIÓ!

18/set - Pujalt

Iniciem les obres d'instal·lació de l'aerogenerador comunitari a Pujalt (Anoia)

EVOLUCIÓ DEL PROJECTE



Estima les teves necessitats d'energia i participació recomanada en el projecte per compensar les teves emissions de CO₂ i radioactivitat.

FAMÍLIA / PARTICULAR

EMPRESA / ENTITAT