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# Industry and Market scenarios

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Chief Operating Officer  
European Wind Energy Association

Marseille  
15 March 2009



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Wind energy markets



Wind industry actors



Targets and scenarios

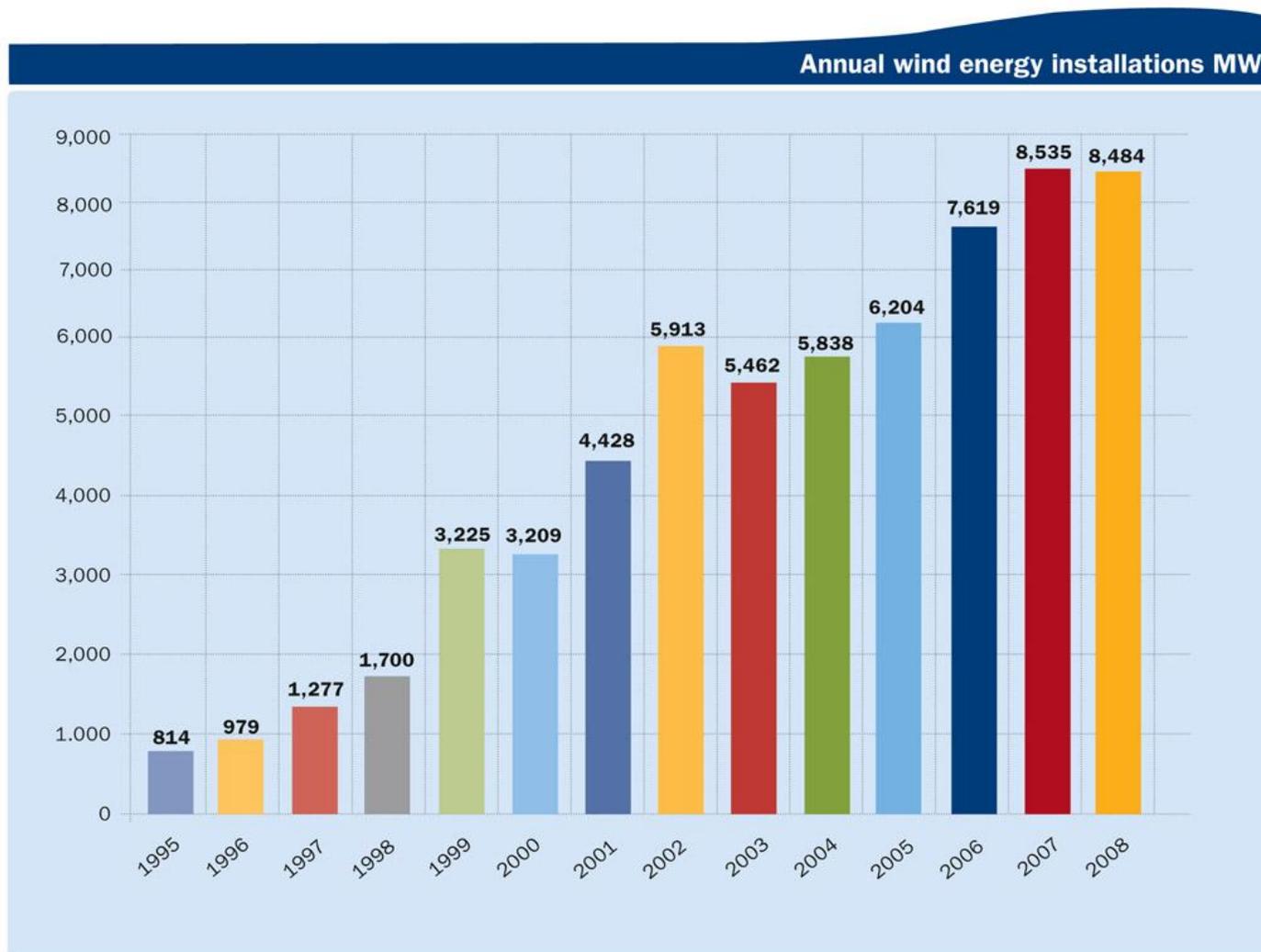


# ANNUAL WIND ENERGY INSTALLATIONS (MW, 2008)



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Source: EWEA

Source: EWEA European Wind Map 2008



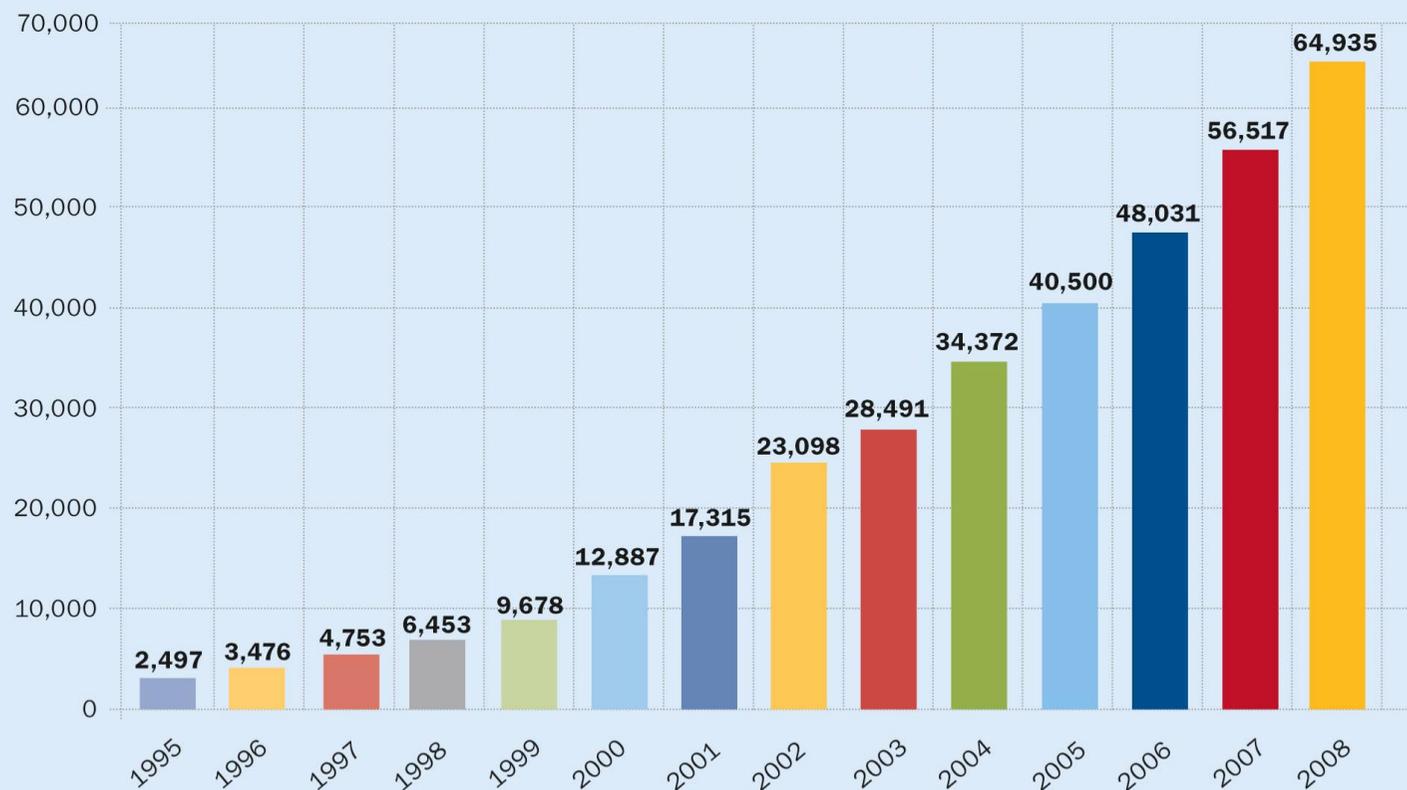
# CUMULATIVE WIND ENERGY INSTALLATIONS (MW)



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Cumulative wind energy installations



Source: EWEA

Source: EWEA European Wind Map 2008

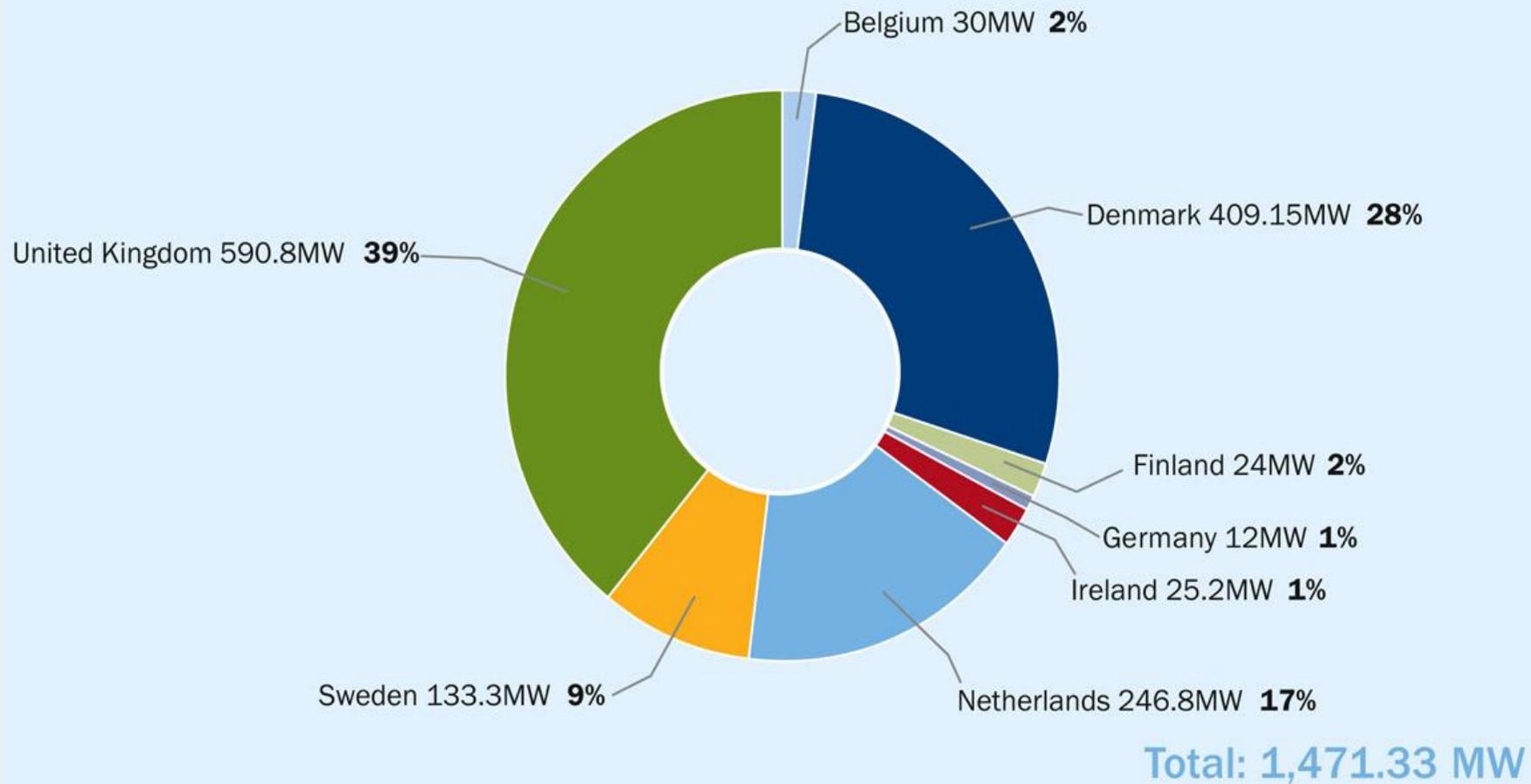


# OFFSHORE WIND - OPERATING



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## Operational offshore wind farms



Source: EWEA Offshore Statistics (January 2009)

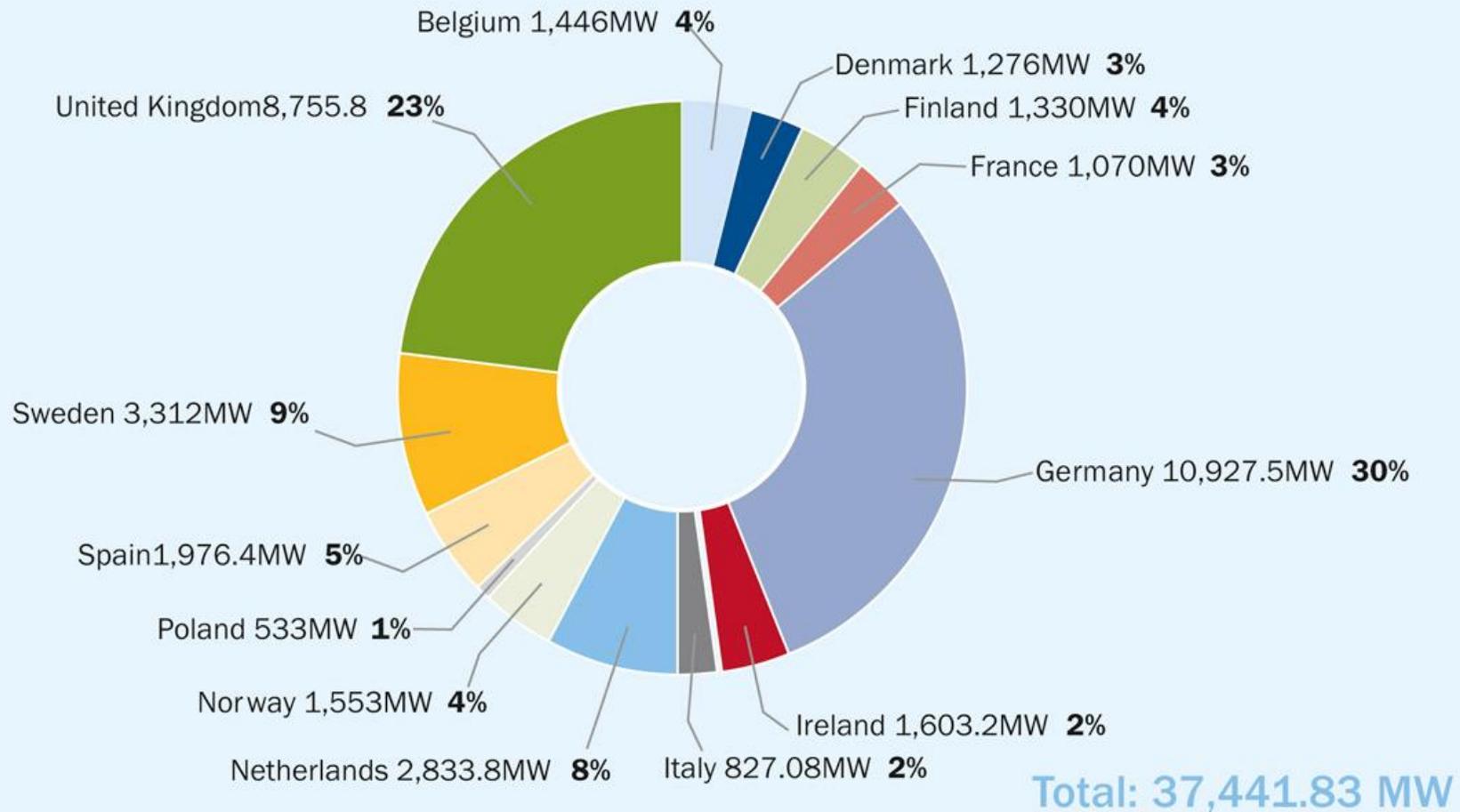


# OFFSHORE WIND – 2015 PROSPECTS



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Offshore wind farms Planned for 2015



Source: EWEA Offshore Statistics (January 2009)

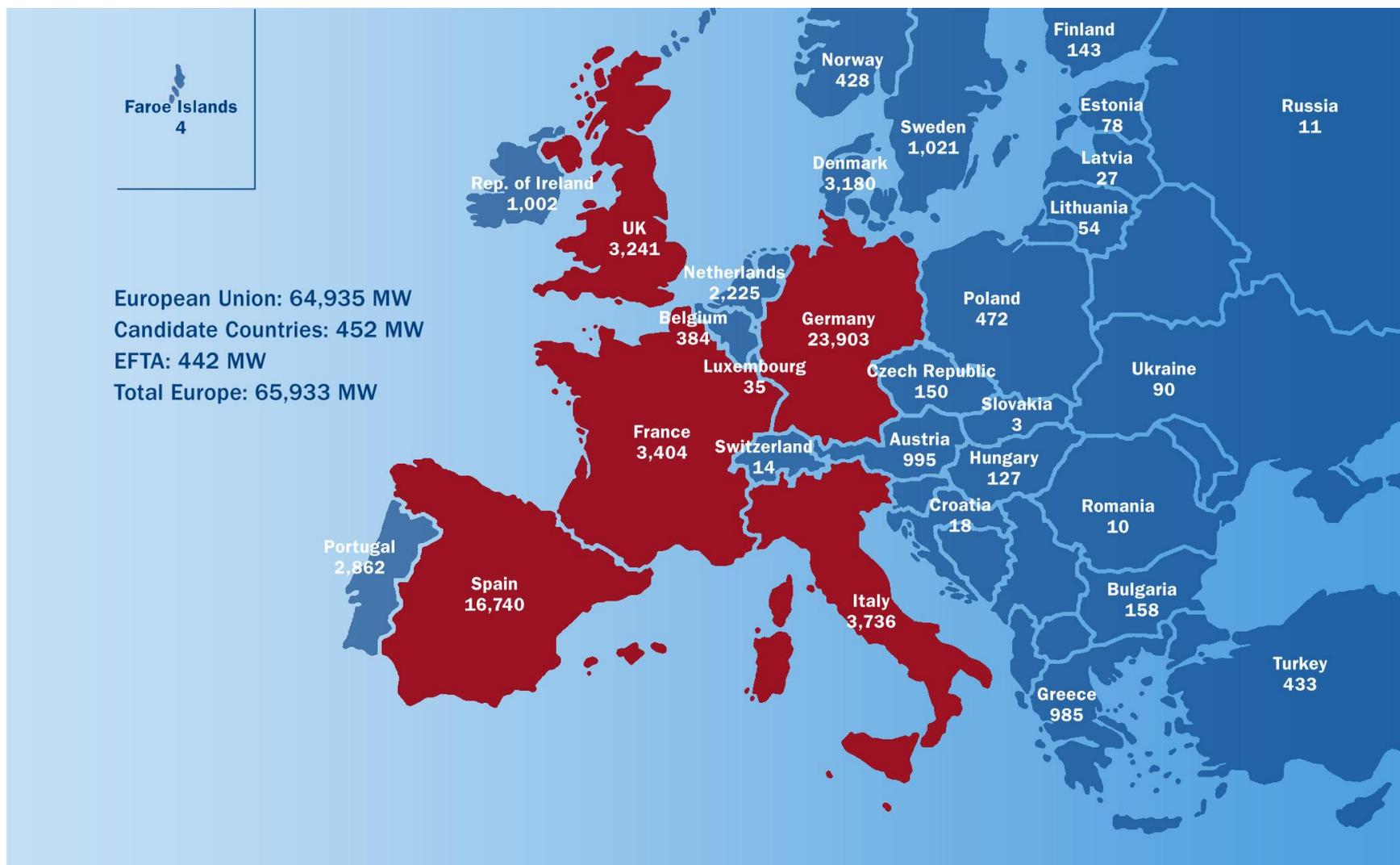


# EU TOP 5 NEW CAPACITY



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Source: EWEA Wind Map 2008

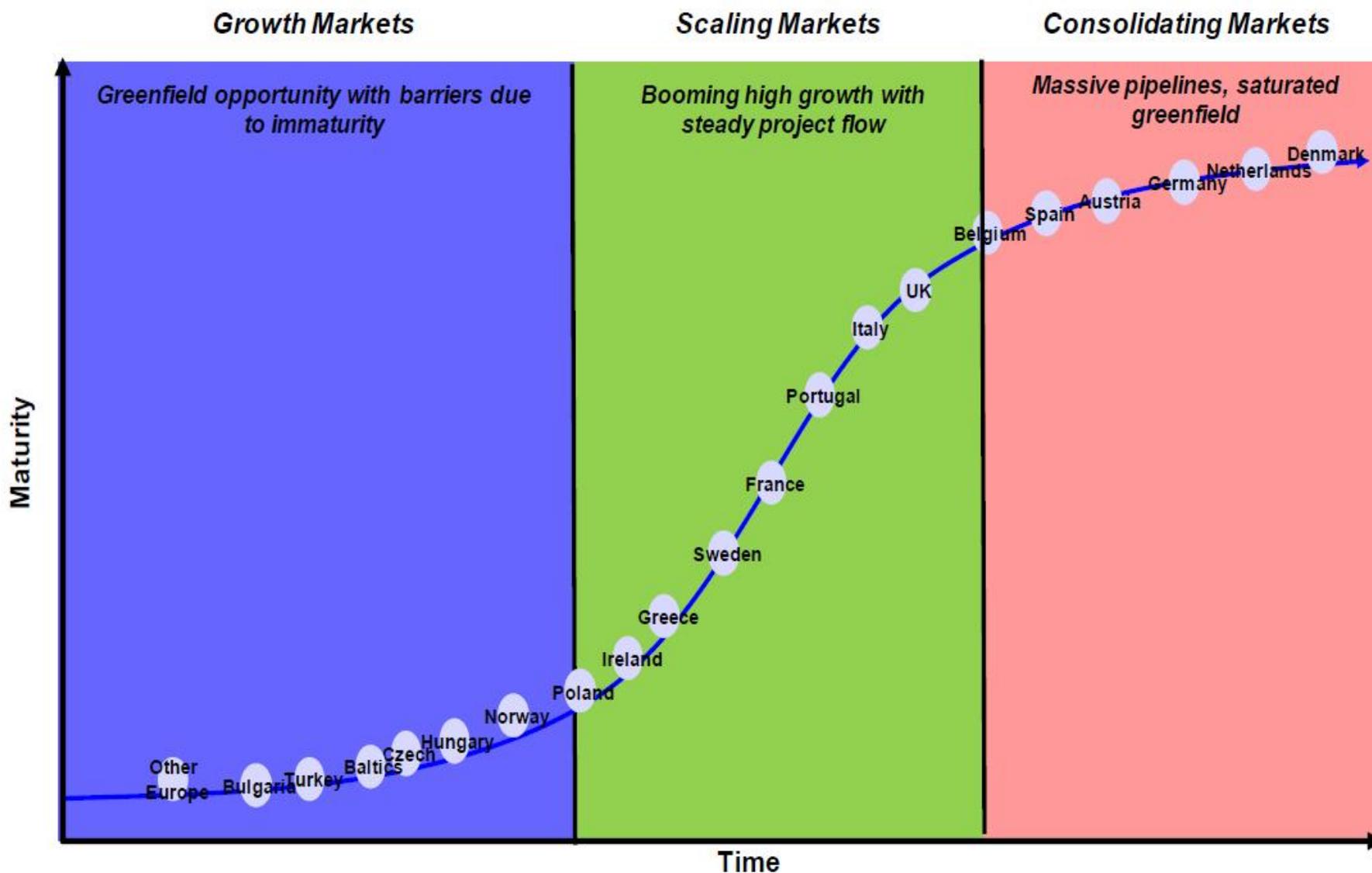


# ONSHORE MARKETS ARE DEVELOPING AT THREE SPEEDS



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Source: Emerging Energy Research



## WIND ENERGY IN EU-27 – 2008 FACTS (I)



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- Æ 65 GW installed capacity, incl. 1.47 GW offshore
- Æ Annual installations of 8.5 GW, incl. 0.35 GW offshore
- Æ Electricity production of 142 TWh
- Æ Meeting 4.2% of total EU electricity demand
- Æ Providing power equivalent to the needs of 35 million average EU households



## WIND ENERGY IN EU-27 – 2008 FACTS (II)



THE EUROPEAN WIND ENERGY ASSOCIATION

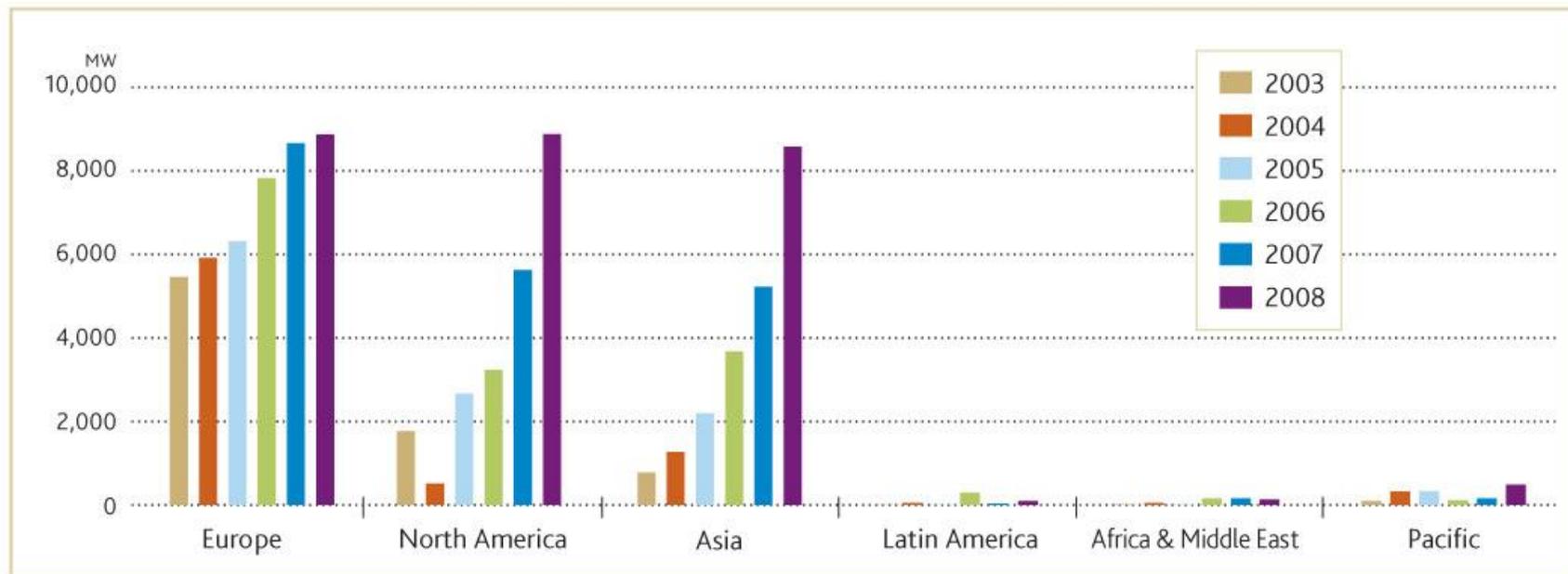
- Æ Avoiding 108 Mt of CO<sub>2</sub> – equivalent to taking more than 50 million cars off the road (20% of the EU car fleet) and equal to 31% of the EU-15's Kyoto obligation
- Æ Annual avoided fuel cost of €5.4 billion
- Æ Annual avoided CO<sub>2</sub> costs of approximately €2.4 billion
- Æ Annual investments in wind turbines of €11 billion



# THE GLOBAL SCENE



ANNUAL INSTALLED CAPACITY BY REGION 2003-2008



Source: GWEC

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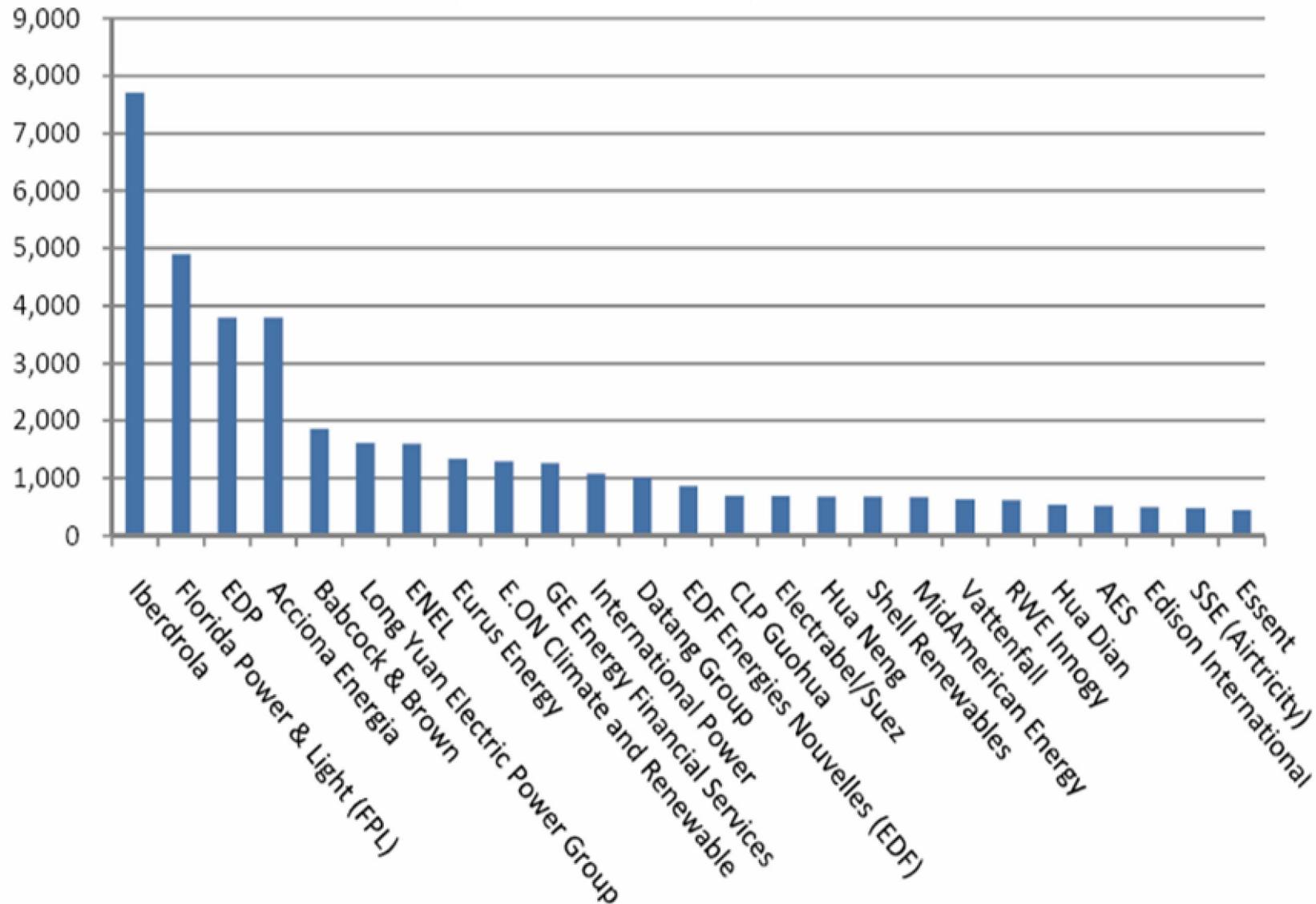
Targets and scenarios



# UTILITIES LEAD THE MARKET (2007, MW INSTALLED)

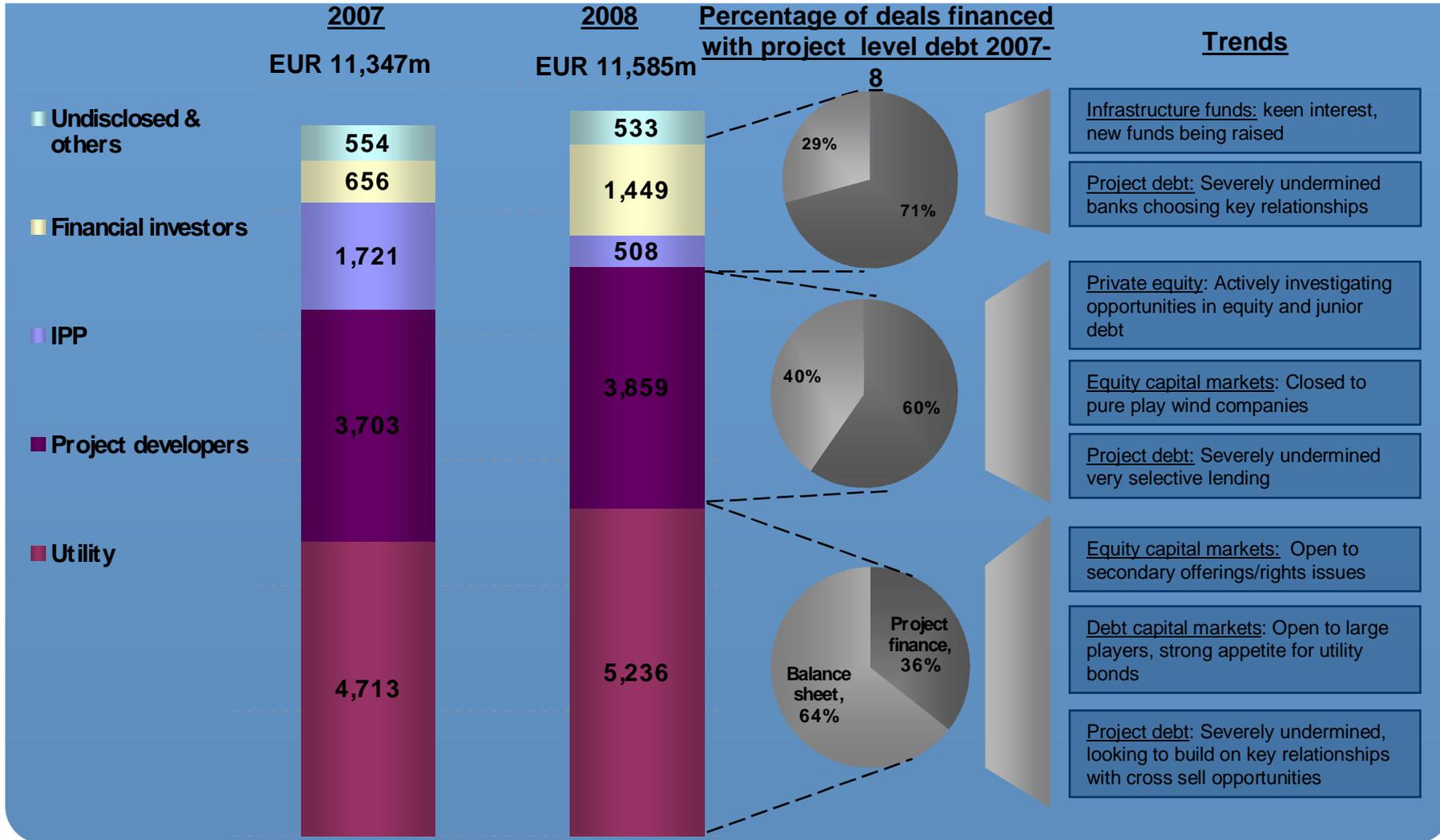


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Source: MAKE Consulting

# EU 27 new build wind asset finance 2007-2008 by type of sponsor and sponsors use of project finance: EURm and %



Notes: Rebased to July 2004. Wind asset price index benchmarks public acquisition prices (enterprise value) of commissioned wind asset globally.

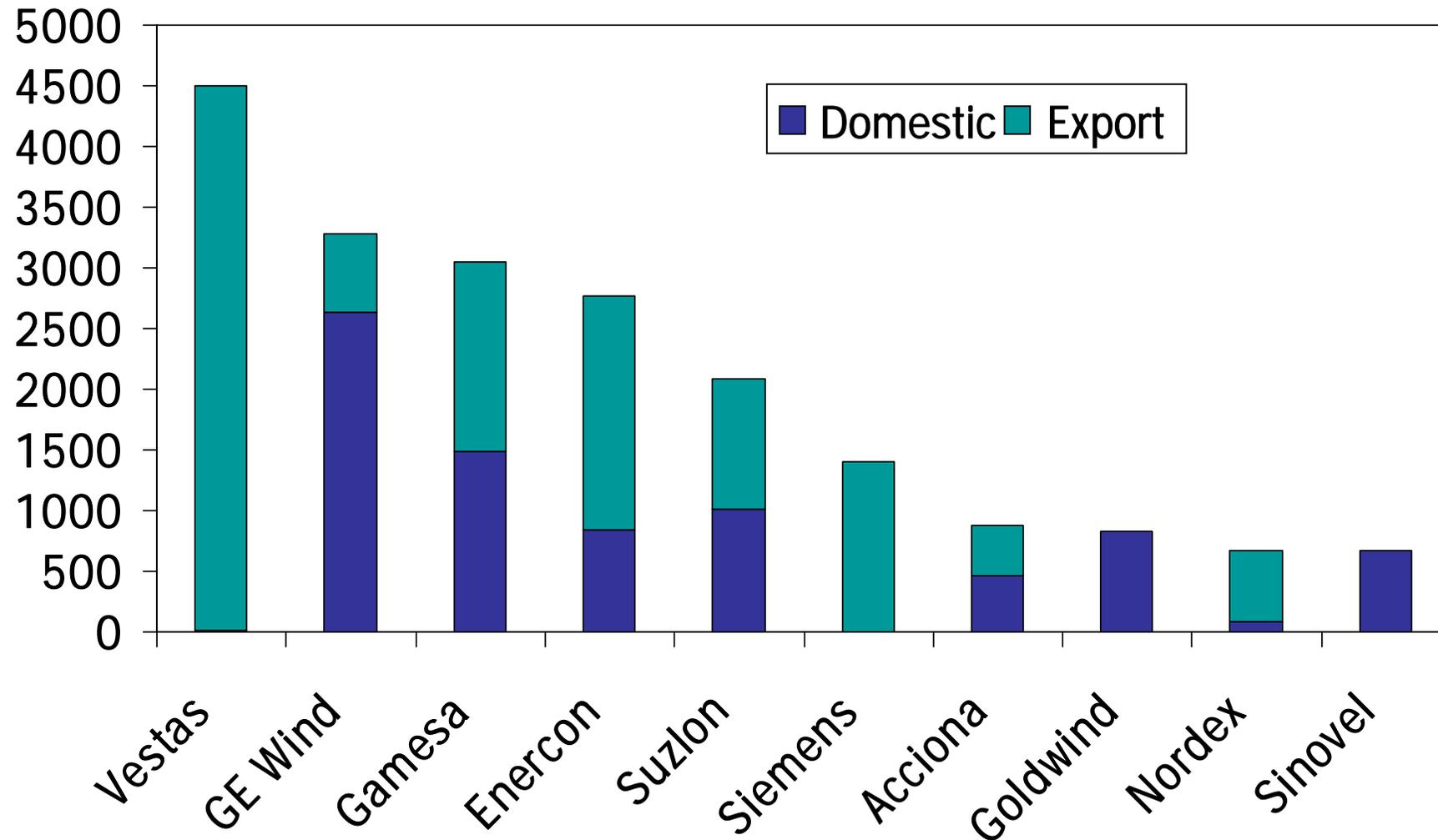
Source: New Energy Finance,



# EU LEADERSHIP: EXPORT 2007



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Source: BTM Consult



# SUPPLY CHAIN STRATEGIES REIGNITE VERTICAL INTEGRATION



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|                                 | In-house                   | Outsource           | ROTOR/BLADE             | GEARBOX  | CONTROLS      | GENERATOR      | CASTINGS   | TOWER                        |                         |             |             |
|---------------------------------|----------------------------|---------------------|-------------------------|--|---------------|----------------|--|------------------------------|-------------------------|-------------|-------------|
| <b>Vestas</b>                   | Vestas                     | LM                  | Vestas                  | Hansen, Winergy, Moventas, Fellar, Ja-Ke           | Vestas        | Vestas         | ABB, Leroy Summer, Elin (VAT Tech)                 | Vestas                       | Patel Alloy, Metso      | Vestas      | Local firms |
| <b>GE Wind Energy</b>           | LM, NOI, GE, A&R, Tecsis   |                     | GE                      | Winergy, Moventas, Bosch/Rexroth, Eickhoff, Fellar | GE            | LDW, GE, Loher | ATI, Sakana, Hodge, Felguera                       | SIAG, Local firms            |                         |             |             |
| <b>MITSUBISHI POWER SYSTEMS</b> | Mitsubishi / TPI (Vientek) |                     | Ishibashi               |  | Mitsubishi    | Mitsubishi     | Various local firms                                | Mitsubishi                   | Local firms             |             |             |
| <b>Gamesa</b>                   | Gamesa                     | LM                  | Echesa (Gamesa)         | Hansen   | Ingelectric   | Ingelectric    | Fundación Nodular del Norte                        | ATI, Sakana, Felguera, Hodge | Gamesa                  | Local firms |             |
| <b>NORDEX</b>                   | Nordex                     | LM, NOI, Baoding HT | Winergy, Eickhoff       |  | Nordex        | Mita           | Loher/Winergy                                      | Siempelkamp                  | Nordex                  | Omnical     | Local firms |
| <b>SIEMENS</b>                  | Siemens Wind Power         | LM                  | Winergy                 | Hansen   | KK Electronic | Loher/Winergy  | ABB  | Sakana, Metso, Local firms   | K GW, Roug, Local firms |             |             |
| <b>ENERCON</b>                  | Enercon                    |                     | No gearbox              |  | Enercon       | Enercon        | Siempelkamp  | Enercon                      | SAM, Local firms        |             |             |
| <b>SUZLON</b>                   | Suzlon                     | LM                  | Hansen                  | Winergy  | Suzlon        | Suzlon         | Elin   | Patel Alloy                  | Suzlon                  | Local firms |             |
| <b>REPOWER Systems</b>          | LM, A&R                    |                     | Winergy, Eickhoff, Renk |  | Mita Teknik   | Winergy, VEM   | Siempelkamp  | Klotz, Reuther, local firms  |                         |             |             |
| <b>ecotècnia</b>                | LM                         |                     | Pujol Muntalá           |  | Ecotècnia     | Winergy        | Felguera Melt, Sakana, Fundación Nodular del Norte | Coiper, local firms          |                         |             |             |

Source: Emerging Energy Research

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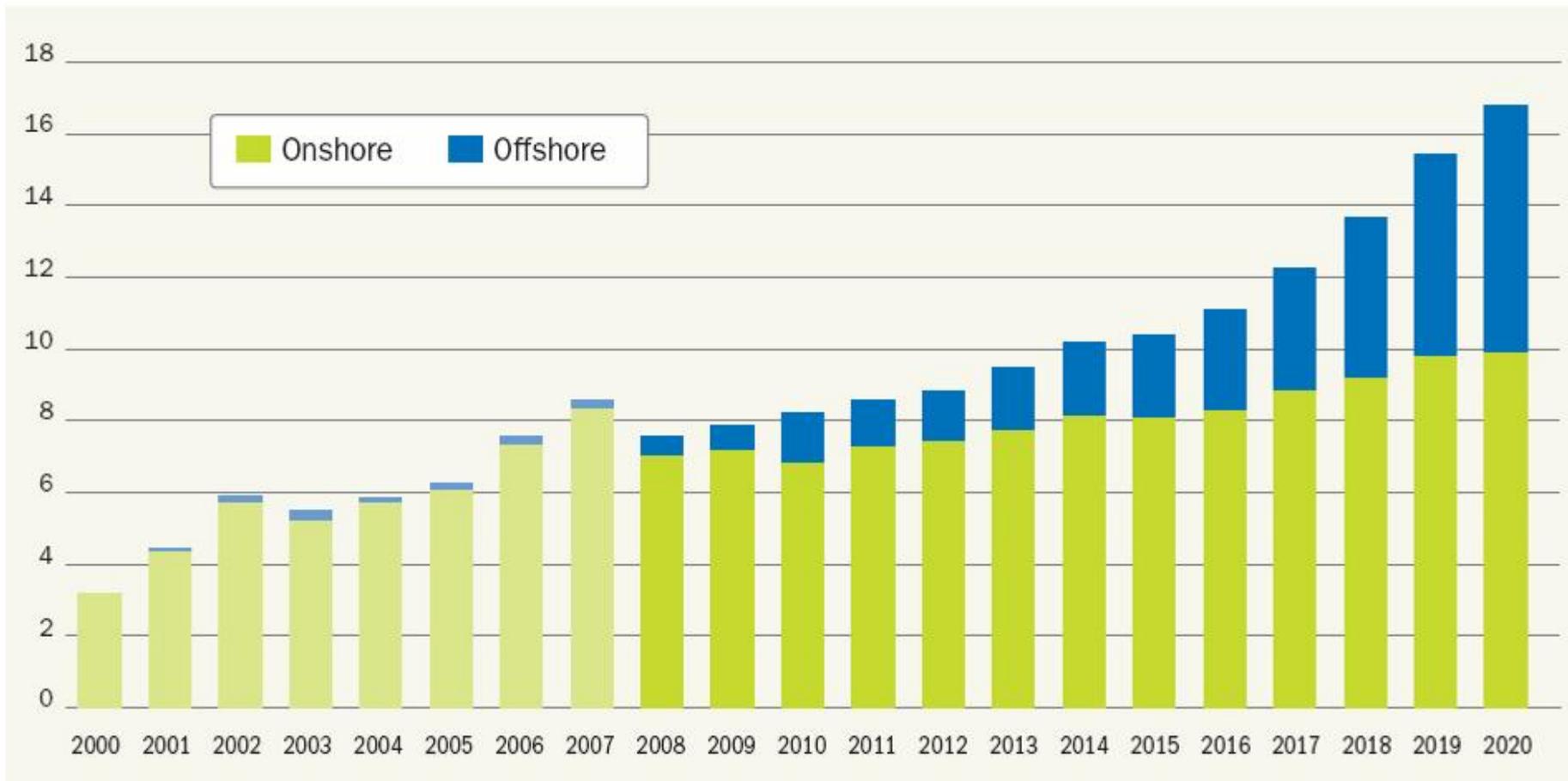


# EU WIND ENERGY ANNUAL INSTALLATION 2000-2020 (GW)



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Source: EWEA



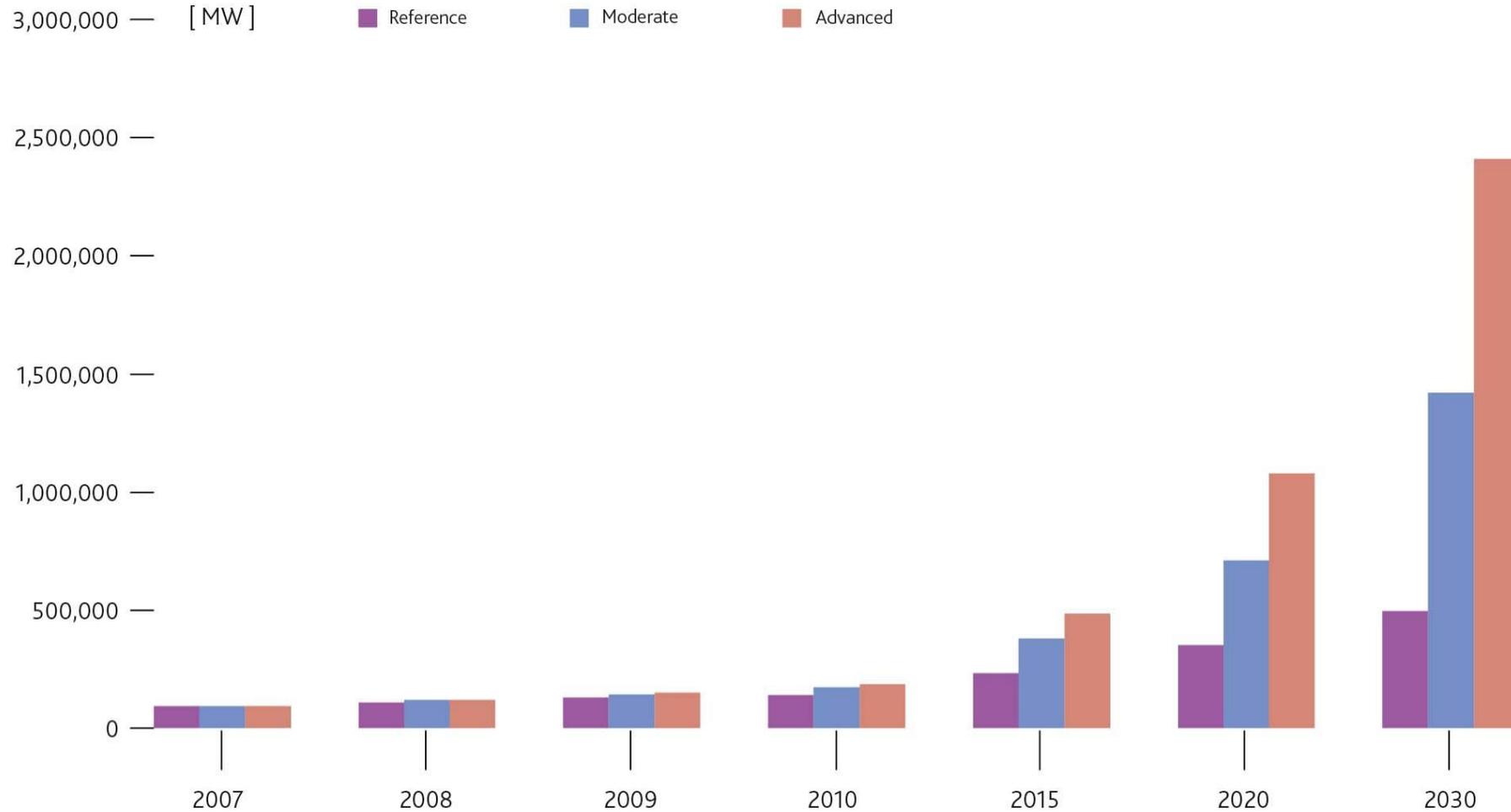
# GLOBAL WIND ENERGY ANNUAL INSTALLATION 2000-2020 (GW)



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## GLOBAL CUMMULATIVE NEW WIND CAPACITY



Source: GWEC



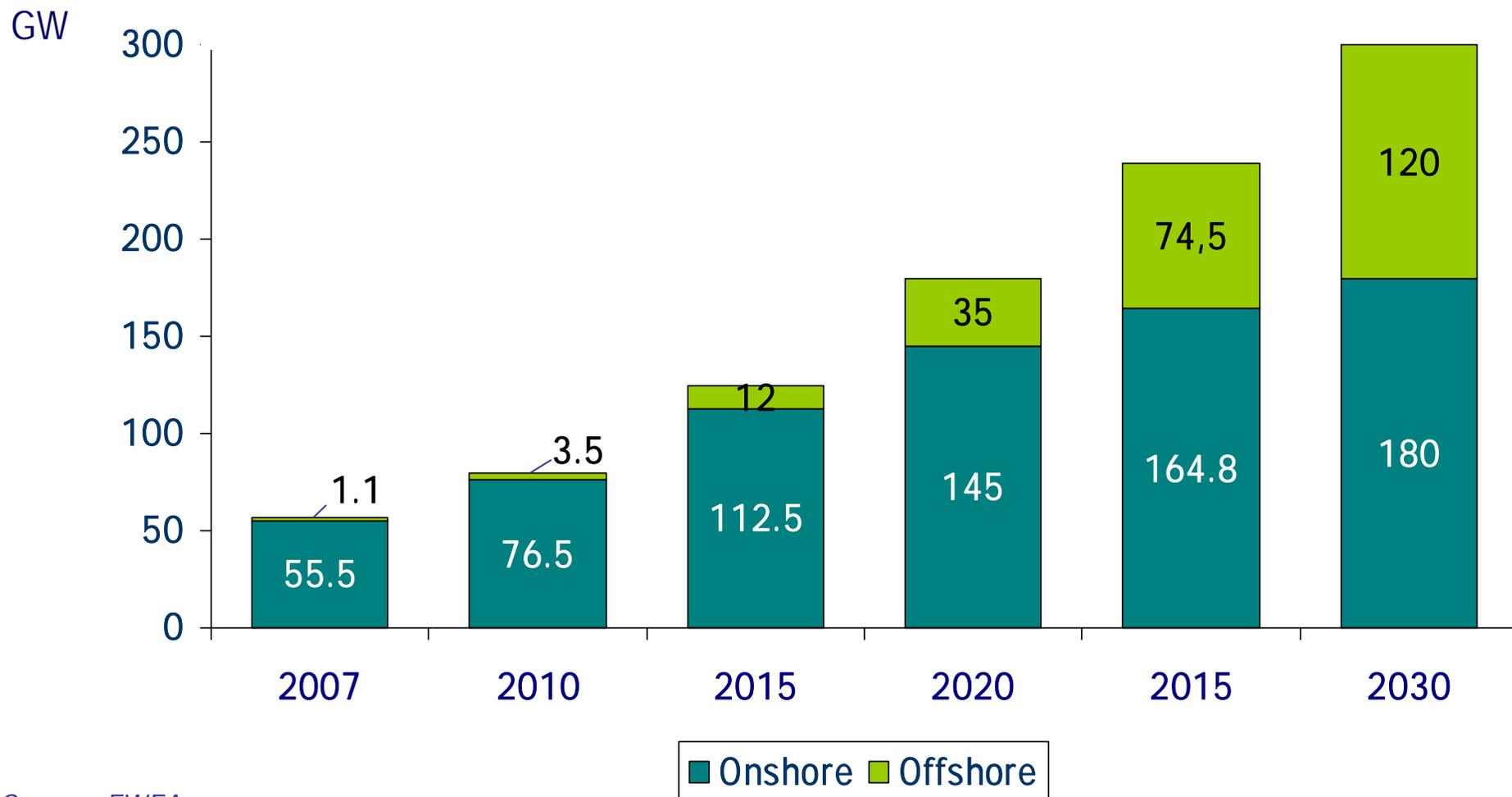
# WIND ENERGY IN EU (2007–2030) & ELECTRICITY SH



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|                   | 2007 | 2010 |  2015 |  2020 | 2015 |  2030 |
|-------------------|------|------|---|--|------|--|
| Electricity share | 3.7% | 5%   | 8%  | 12%  | 16%  | 21%  |



Source: EWEA



# THANK YOU VERY MUCH FOR YOUR ATTENTION

THE EUROPEAN WIND  
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