



## Wind Energy Installations in Pakistan Clouds on a Sunny Sky?

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**Lahmeyer International GmbH**  
Dr. Patric Kleineidam  
**Renewable Resources**  
Irfan Afzal Mirza



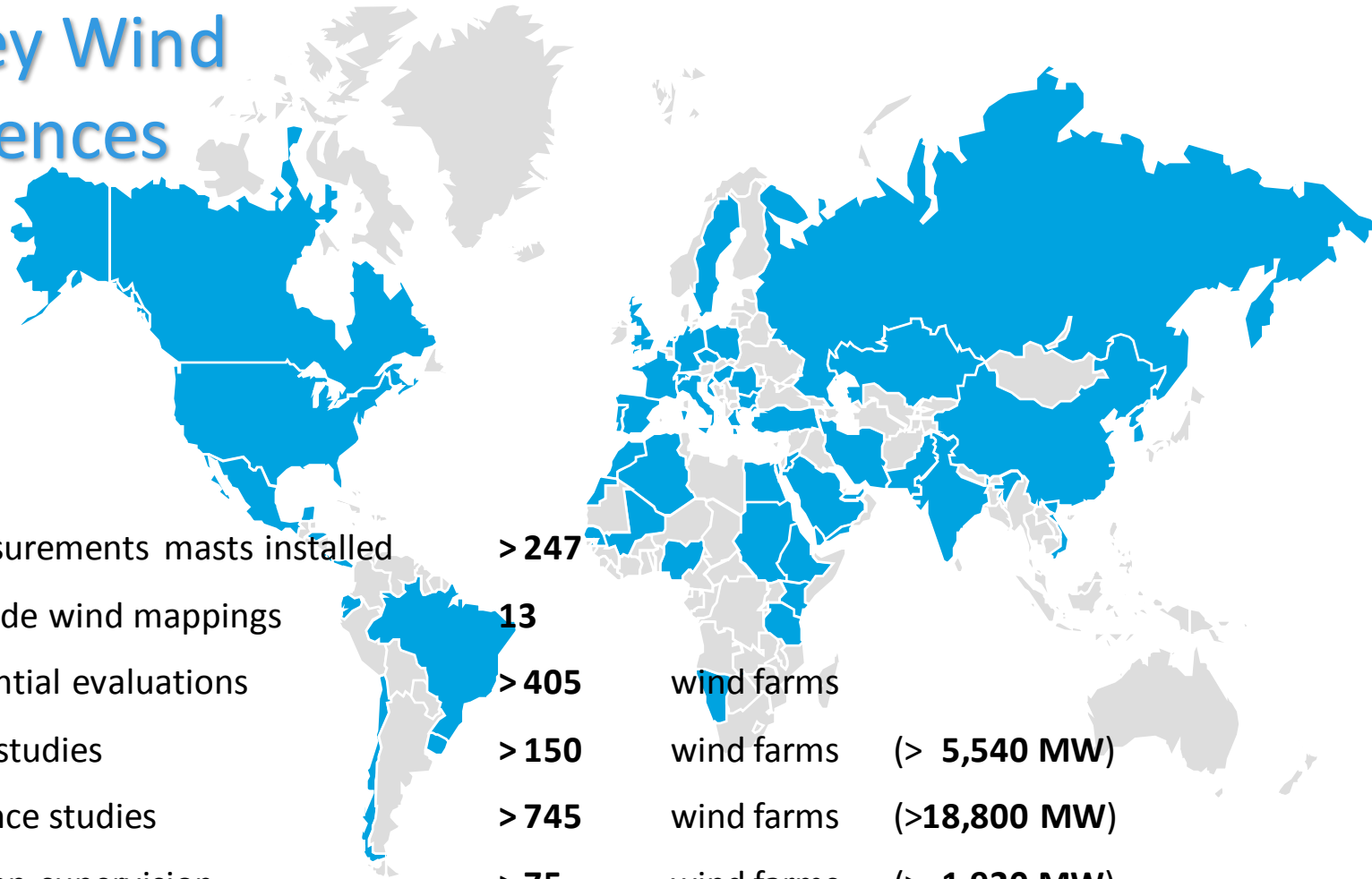
# Lahmeyer International

Company:	Lahmeyer International GmbH (LI) Engineering and Consulting Services	
Founding Year:	1966	
Headquarter:	Bad Vilbel, Germany	
Services:	Technical and economic planning and consulting services	
Fields of Activity:	- Energy - Hydropower and Water Resources - Civil Engineering and Project Management	
LI Group:	11 consolidated associated Companies	
Staff :	1560	
Turnover 2010:	LI Group :	147 million Euro
Projects:	in 165 Countries	





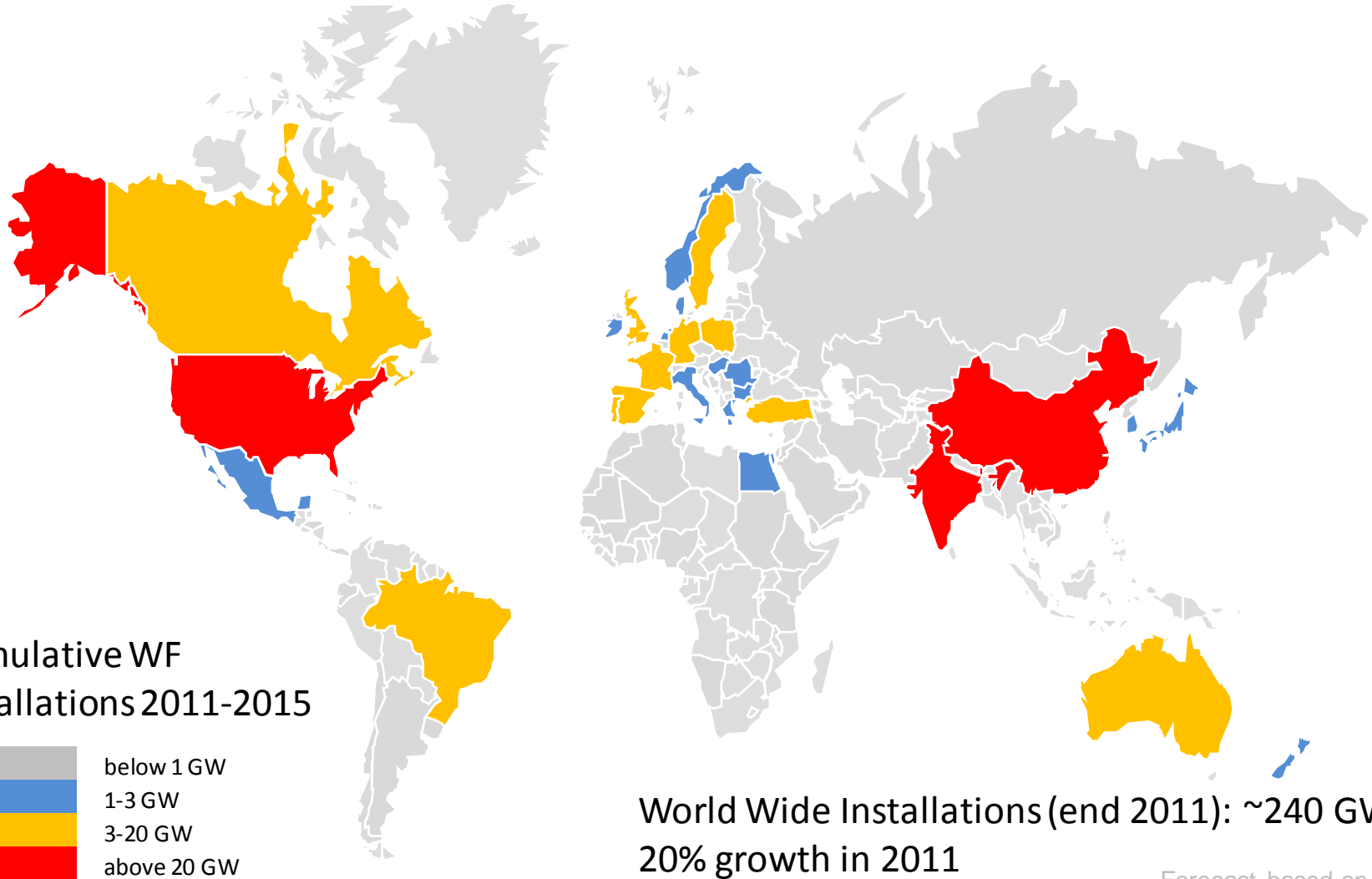
# LI - Key Wind References



- Wind measurements masts installed **> 247**
- Country wide wind mappings **13**
- Wind potential evaluations **> 405** wind farms
- Feasibility studies **> 150** wind farms (**> 5,540 MW**)
- Due diligence studies **> 745** wind farms (**>18,800 MW**)
- Construction supervision **> 75** wind farms (**> 1,920 MW**)
- Operation and maintenance supervision **> 90** wind farms (**> 2,500 MW**)
- Cooperation with RE2 in Pakistan

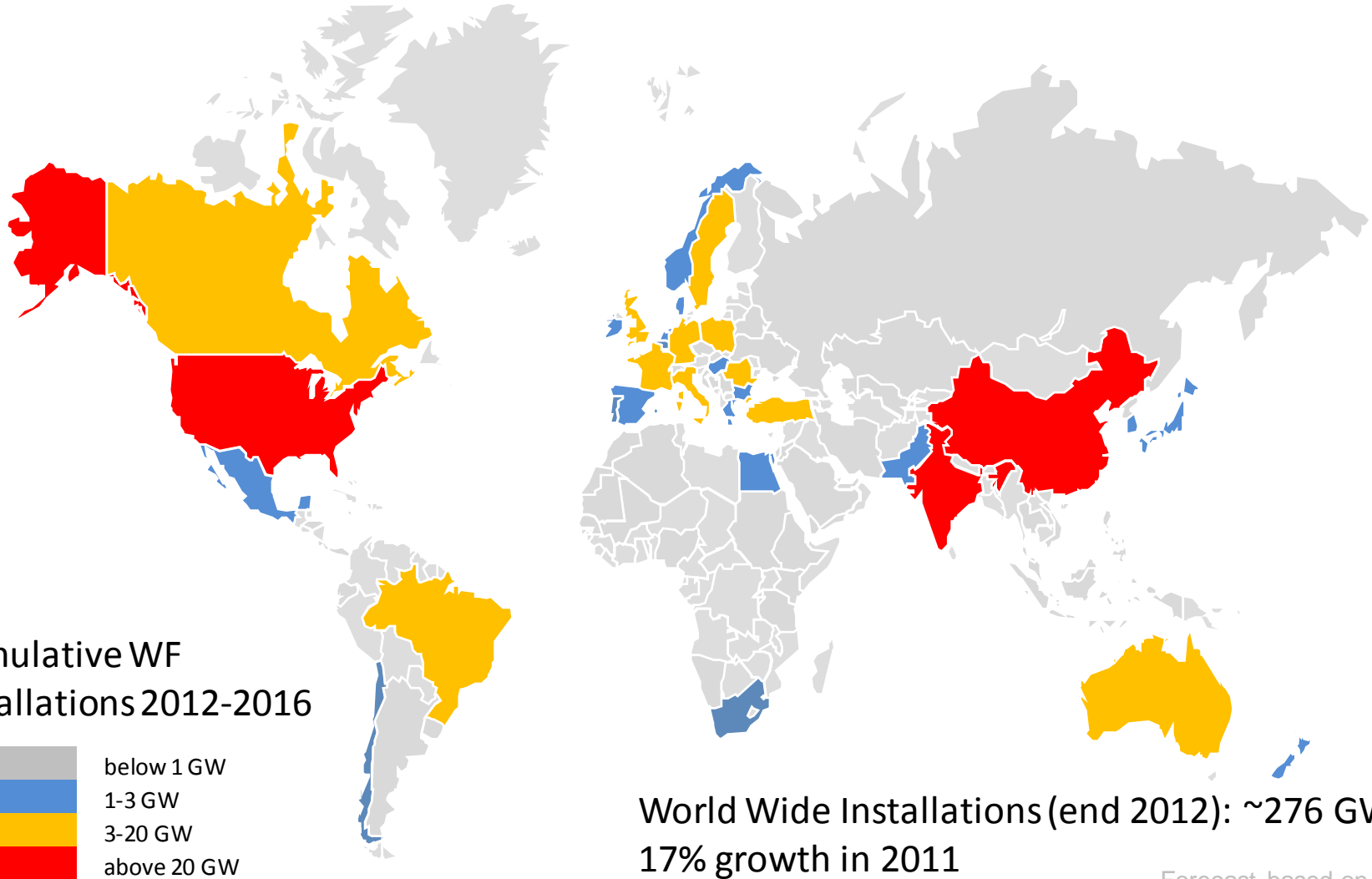


# World Wind Market Developments



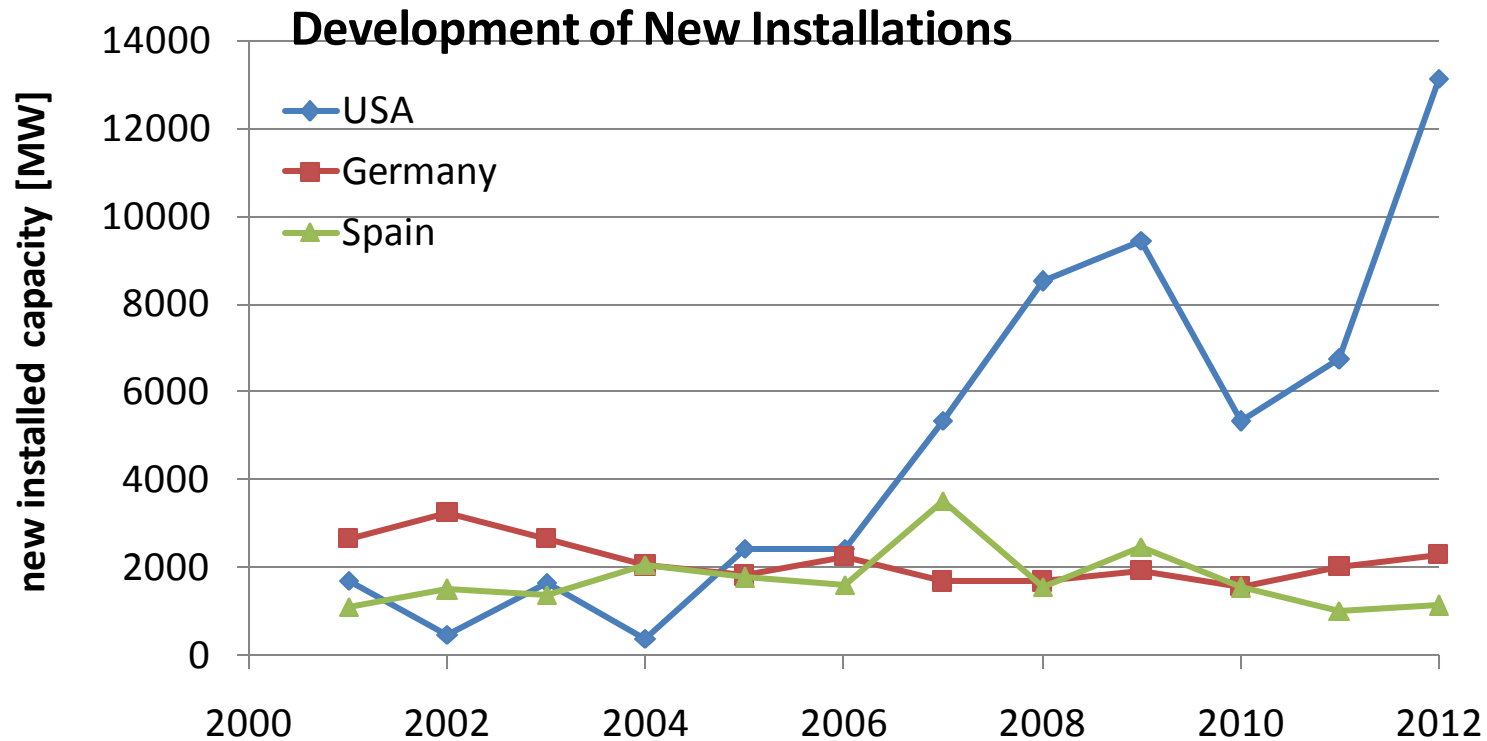
Forecast, based on BTM

# World Wind Market Developments



Forecast, based on BTM

# Stable Conditions are Essential



Germany: Long term stable development

USA: Up and down, depending on framework conditions (PTC) and market prices

Spain: Significant reduction after changes in policy since 2007



# Wind Energy Projects in Pakistan

## In advanced stage of Development

- ca. 12 wind farms, totally 600 MW

## Major Milestones

Financial Closing

## In Implementation/Commissioning

- 5 wind farms, totally 250 MW

Connection to Grid

## In Operation

- 1 wind farm, totally 6 MW

Achieving target energy yield

Lahmeyer International / RE2 is involved providing engineering services for 10 wind farms, totally 585 MW.



# How is the Situation in Pakistan?

## Technical Aspects

- Regions with good wind conditions
- Few projects completed so far
- Experienced turbine manufacturers interested in the market
- Good grid conditions are required

## Regulatory Aspects

- Clear rules established (AEDB, NEPRA), but Tariff has changed recently
- Significant project pipeline exists

## Financial Aspects

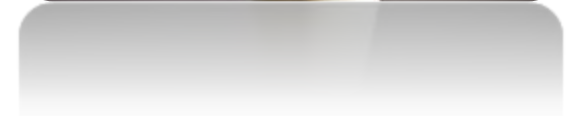
- Requirement: Attracting serious national and international investors and financial institutions with interest in viable projects



## Conclusions

Essential for Keeping Development of wind energy sector in Pakistan ongoing:

- Stable framework conditions
- Keep well balanced Feed-in Tariff
- Good grid connection possibilities
- Professional wind farm planning
- Attracting serious national and international investors and financial institutions with interest in viable projects





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