



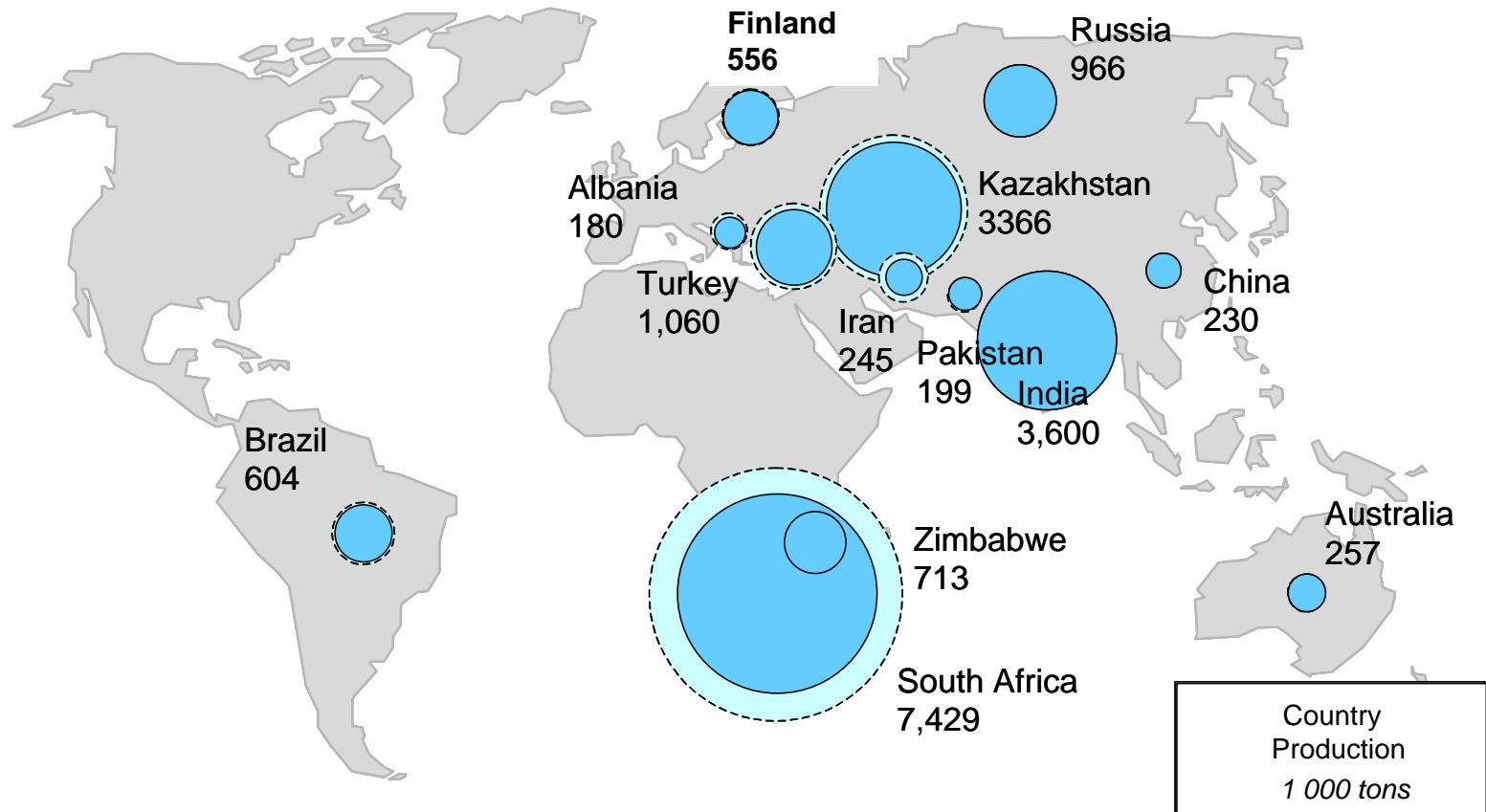
# Ferrochrome – background information

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# Ferrochrome demand - key drivers

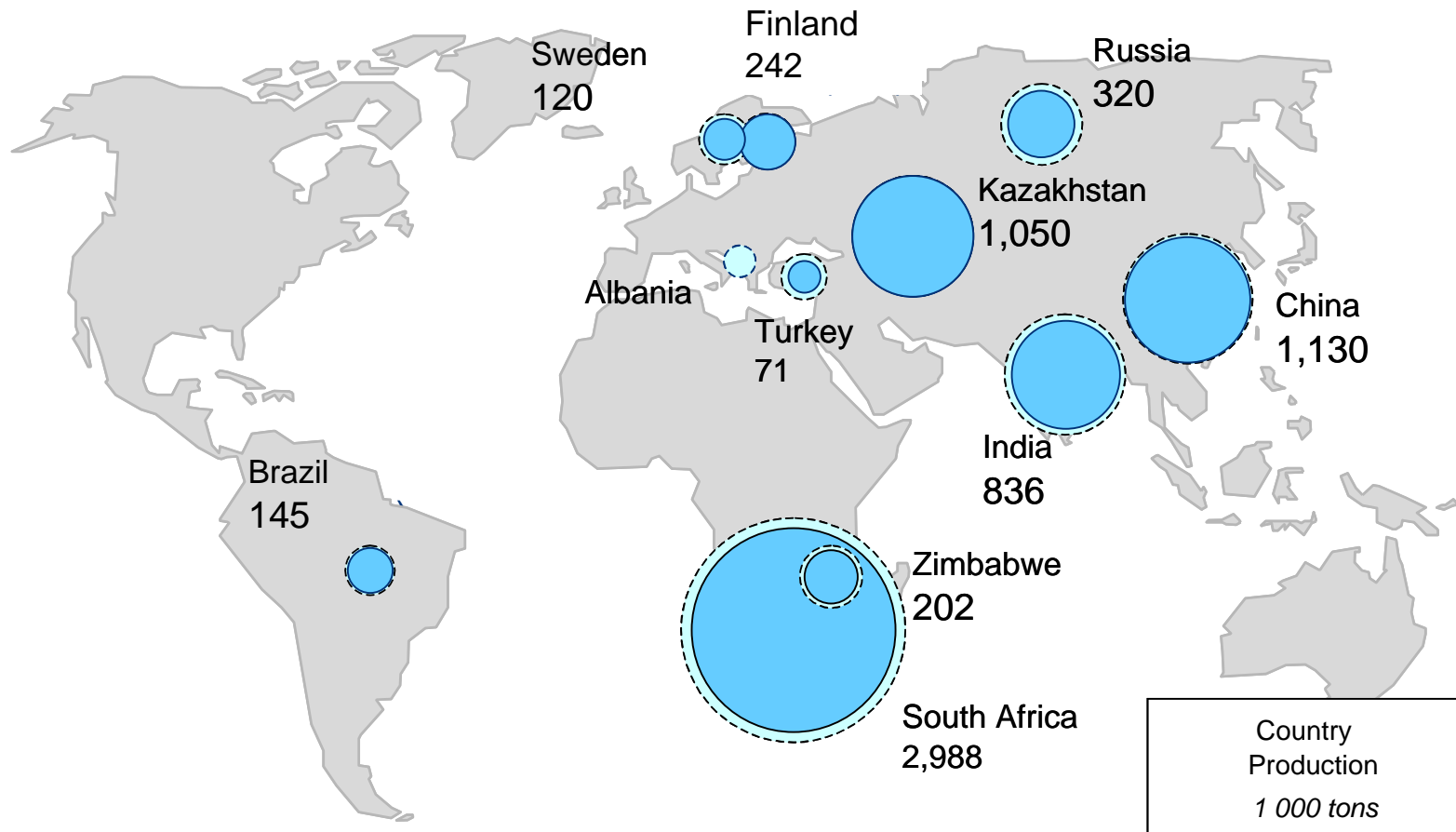
- Demand of ferrochrome from the stainless steel industry has been increasing lately:
- Overall growth in stainless steel production (chrome makes steel stainless)
  - CAGR 5-7% over last 25 years
- Development of grade series production ratio
  - shift from chrome and nickel-containing austenitic grades to no nickel, more chrome-containing ferritic grades
- Electricity restrictions in South Africa, and to some extent also in China, is limiting possibilities to expand ferrochrome production in the coming years

# World chromite concentrate output 2007



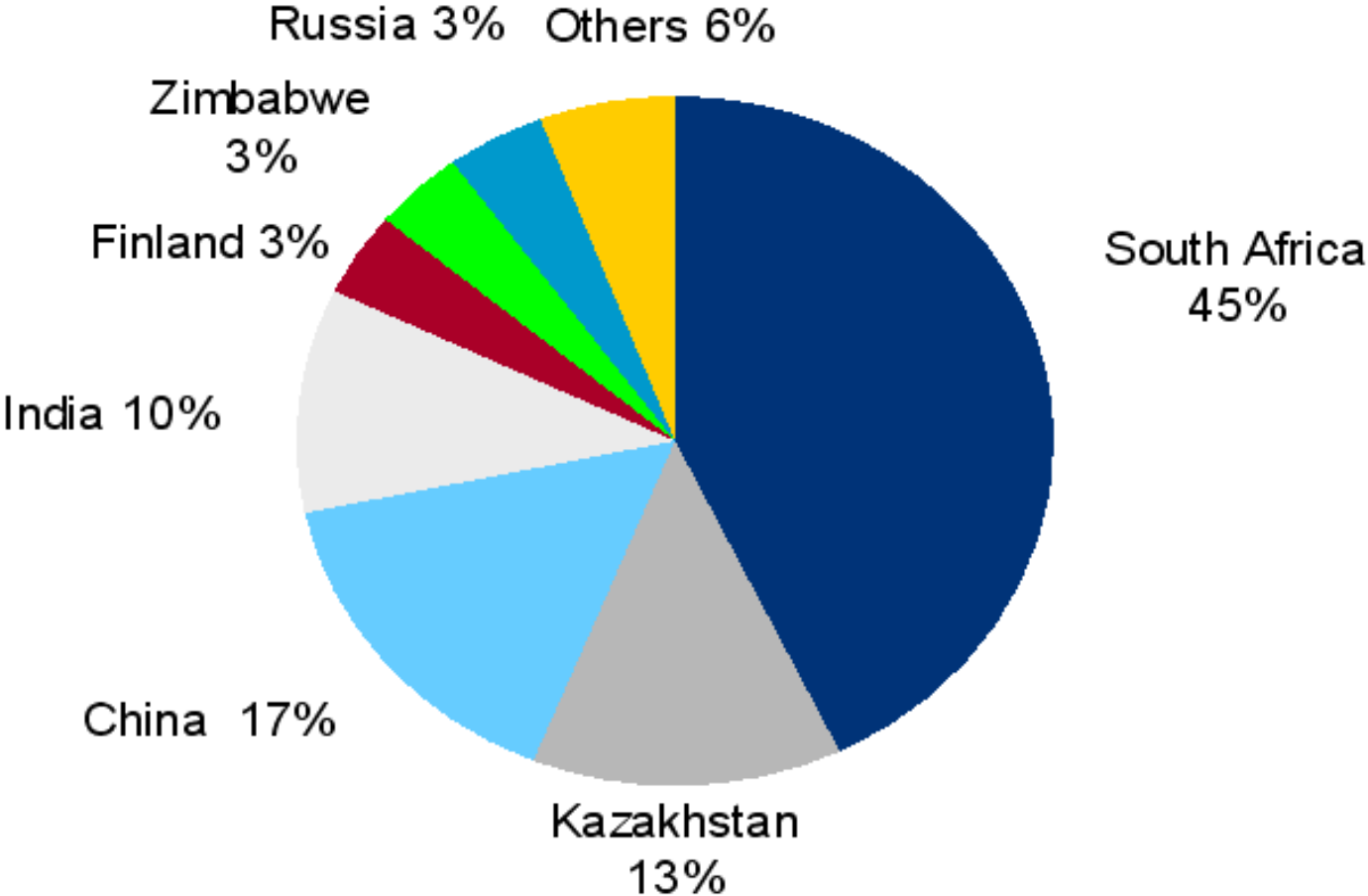
Source: Chrome Market Research Service, Resource-Net, March 2008  
High-carbon ferrochrome basis (60% Cr)

# World production of ferrochrome 2007



Source: Chrome Market Research Service, Resource-Net, March 2008,  
High-carbon ferrochrome basis (60% Cr)

# Global ferrochrome production 7 751 000 tons in 2007



Source: CRU, Ferrochrome Market Service February 2008

# Use of ferrochrome

- Around 90% of mined chromite is converted into different grades of ferrochrome, used by the metallurgical industry
- Stainless steel industry consumes about 90% of ferrochrome produced (mainly high-carbon / charge grade)
- Other end-users include refractory industry, foundry sands, and chemical industry

# Ferrochrome production technologies

- Chromite mining occurs both in open-pit and underground mines
- After mining, the ore is sorted, crushed and impurities are removed
- Ferrochromium is produced in open or more modern closed electric arc furnaces
  - principal raw materials are often upgraded lumpy chromite ore and pelletized chromite concentrate and reductant, usually coking coal
  - process is very energy-intensive, using high amounts of electricity

# Sharp rise in ferrochrome price in 2008

