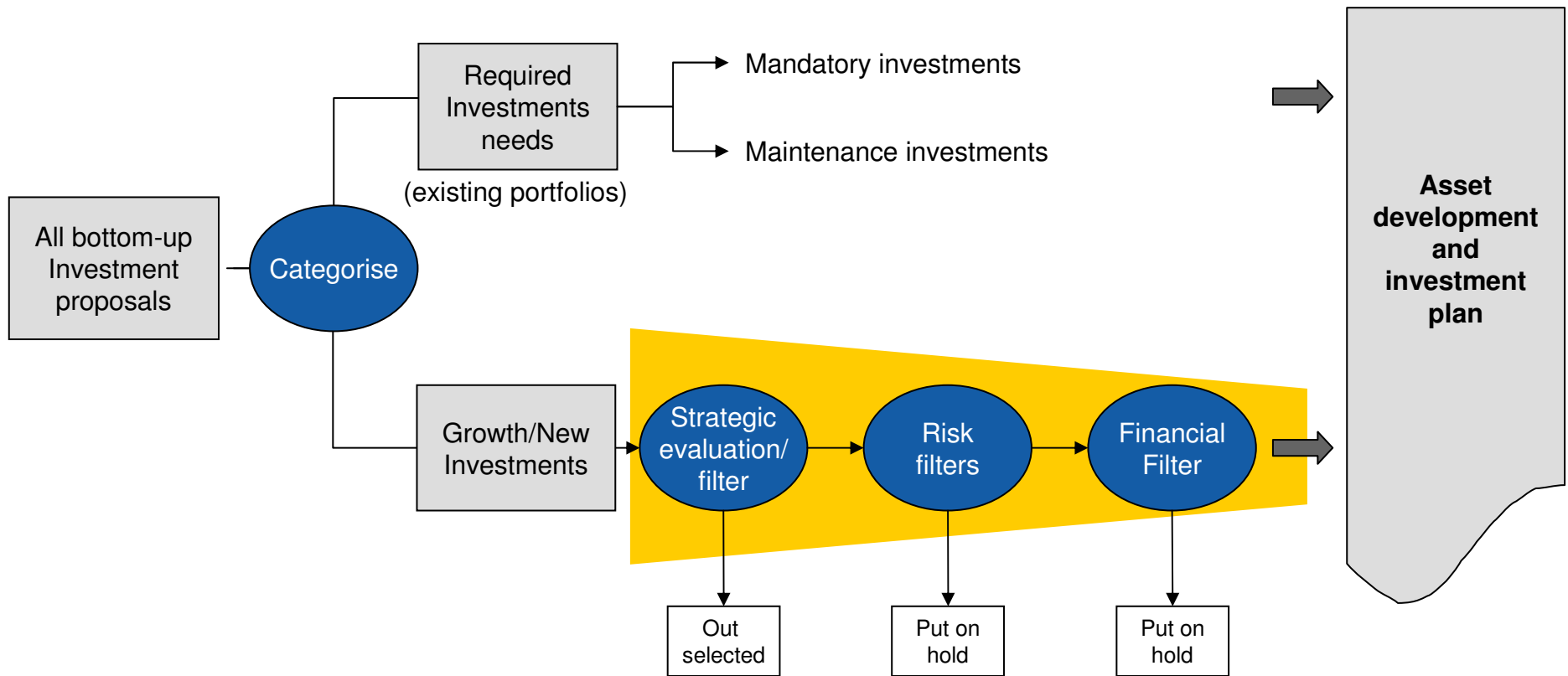


Vattenfall AB

Panel 3: Lessons from infrastructure finance in the renewable energy sector

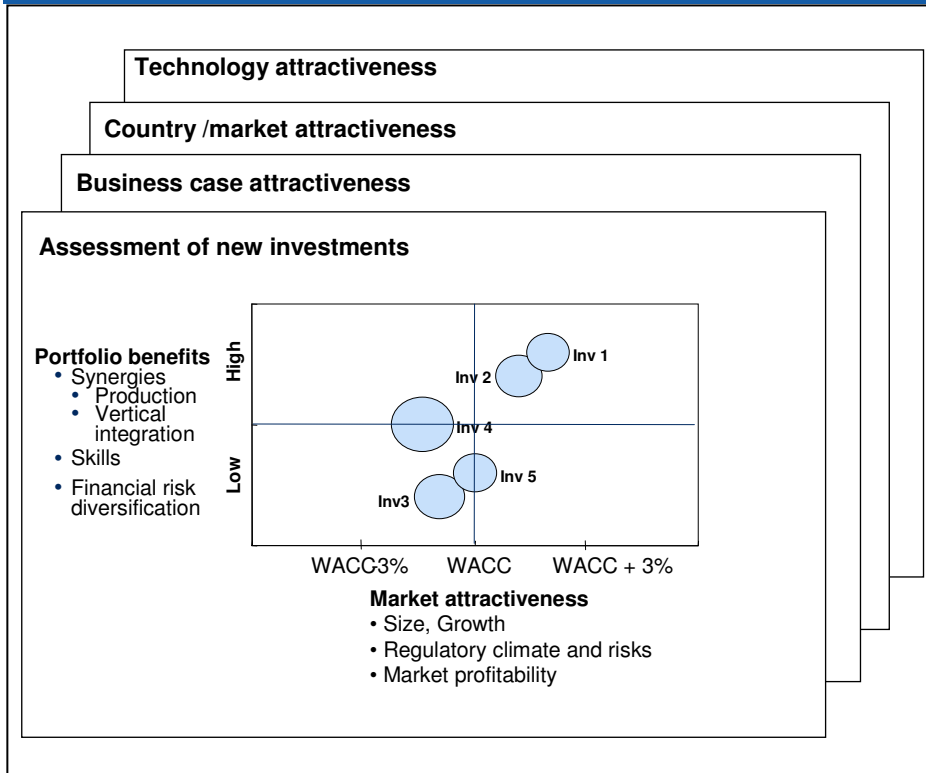
Jonas Kollberg
Group Asset Management
April 2010
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Investment assessment flow

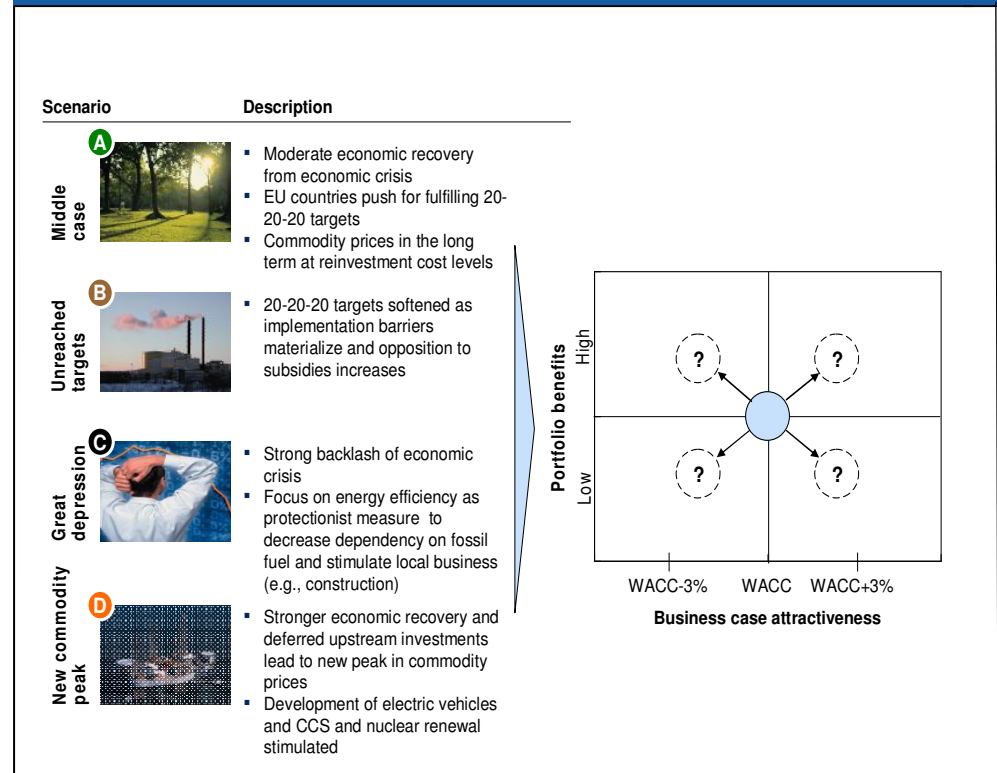


Perspective on investment criteria and decisions

New investment analysis

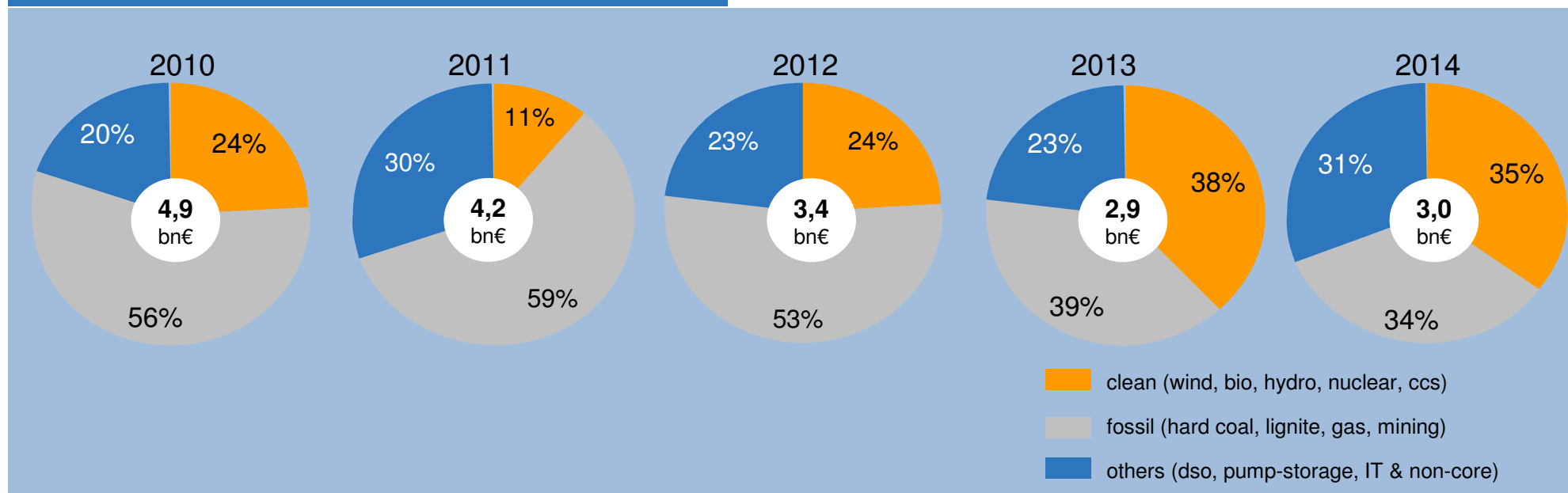


Scenarios and uncertainty modeling capability



Future investments turn toward clean production

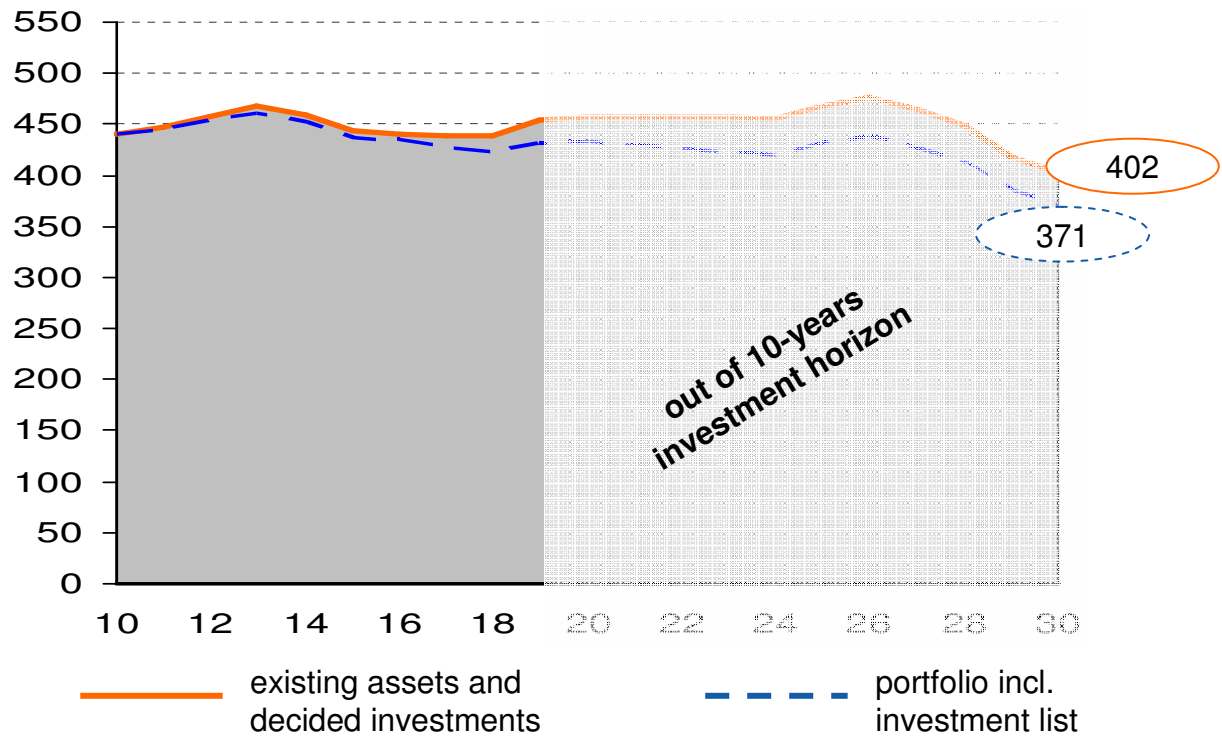
Investment Plan 2010-2014 - fuel split p.a.















After finalizing investments in Moorburg (Q3 2012/Q2 2013), Magnum (Q2 2013), Boxberg (Q1 2011) the portion of CAPEX for clean energy rises substantially.

Impact on CO2 emissions by investments

spec. CO2 emission (in g/kWh_{el})



Support systems play an impotent roll

| | Support system | Risk assessment | Price level |
|---|---|--|--|
|  UK | <ul style="list-style-type: none"> • Certificate system with market pricing of certificates in addition to electricity price. • Offshore generation receives 150% of base support |  Low price risk <ul style="list-style-type: none"> • Price slide brakes incorporated • Quotas automatically increase if system hits targets to avoid price collapse |  <ul style="list-style-type: none"> • Current: Very high <ul style="list-style-type: none"> – Onshore: ~140 EUR /MWh – Offshore ~180 EUR/MWh • Expected: Very high |
|  Denmark | <ul style="list-style-type: none"> • Feed-in premium on top of electricity price for generation • For offshore wind, fixed tariff set by auctioning, and is valid for ~13 years |  Medium to very low price risk <ul style="list-style-type: none"> • Onshore only electricity price risk • Very low price risk offshore <ul style="list-style-type: none"> – Price risk only the last ~7 years of operation (electricity) |  <ul style="list-style-type: none"> • Current: Medium <ul style="list-style-type: none"> – Onshore: ~50 EUR /MWh (additional if repower) – Offshore: Sufficient (individually set) • Expected: Sufficient offshore |
|  Germany | <ul style="list-style-type: none"> • Fixed tariff, higher offshore • Tariffs decrease with time, after 5 yrs onshore and 12 yrs offshore |  No price risk |  <ul style="list-style-type: none"> • Current (proposed): High <ul style="list-style-type: none"> – Onshore: ~80 EUR /MWh – Offshore: >130 EUR/MWh (in addition: TSO pays for grid connection) • Expected: High |
|  Sweden | <ul style="list-style-type: none"> • Certificate system with market pricing of certificates in addition to electricity price |  Very high price risk <ul style="list-style-type: none"> • Complex certificate market with low liquidity |  <ul style="list-style-type: none"> • Current: Low <ul style="list-style-type: none"> – 45 EUR /MWh • Expected: Low |