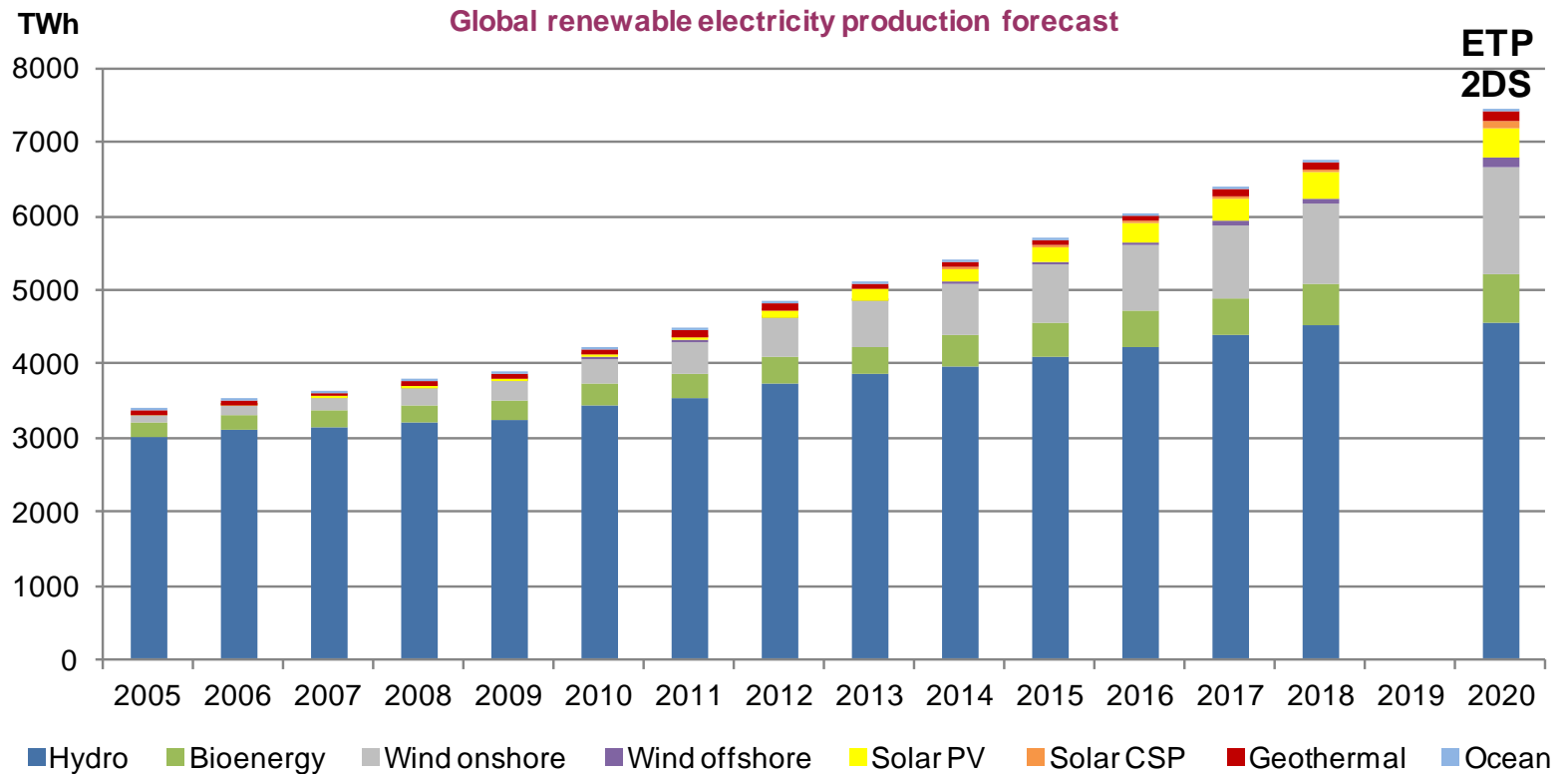


Renewables Portfolios and Risk Profiles

Paolo Frankl

Head of Renewable Energy Division
International Energy Agency

Globally RE power 'on track'

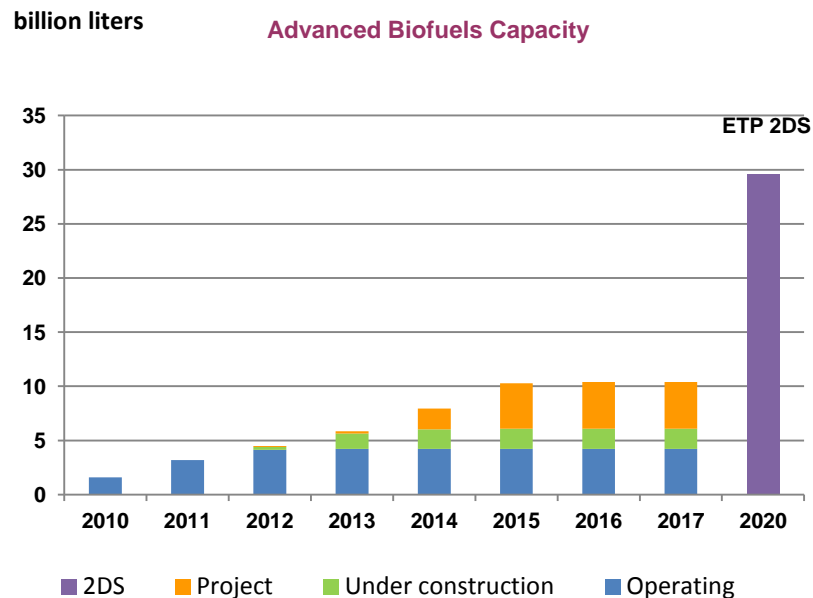
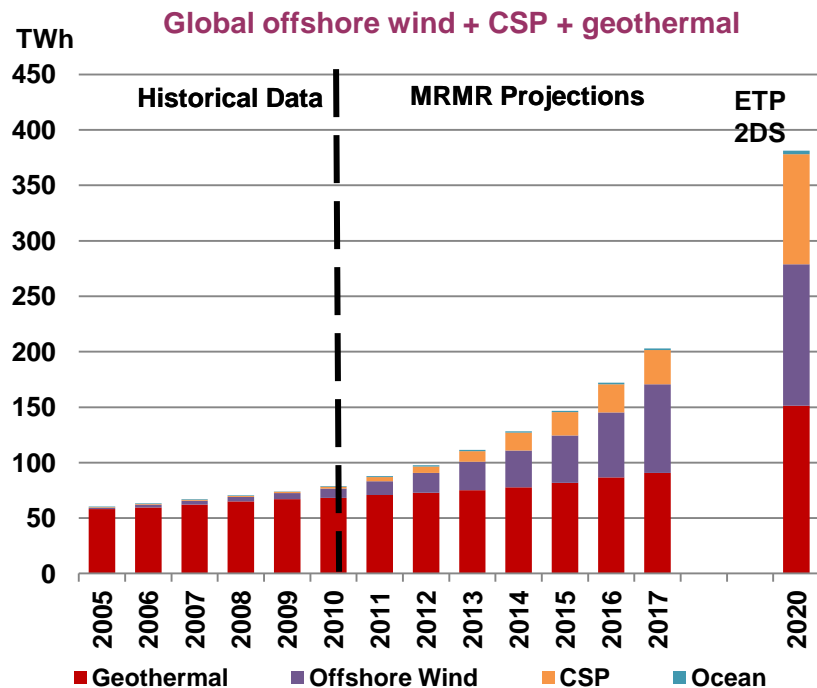


Source: IEA, 2013

Medium-term Renewable Energy Market Report 2013 (forthcoming)

But some technologies expanding slowly

- Wind off-shore, CSP and geothermal deploying more slowly than PV and wind
- Advanced biofuels facing technology and financing challenges



Risk is the issue for investors

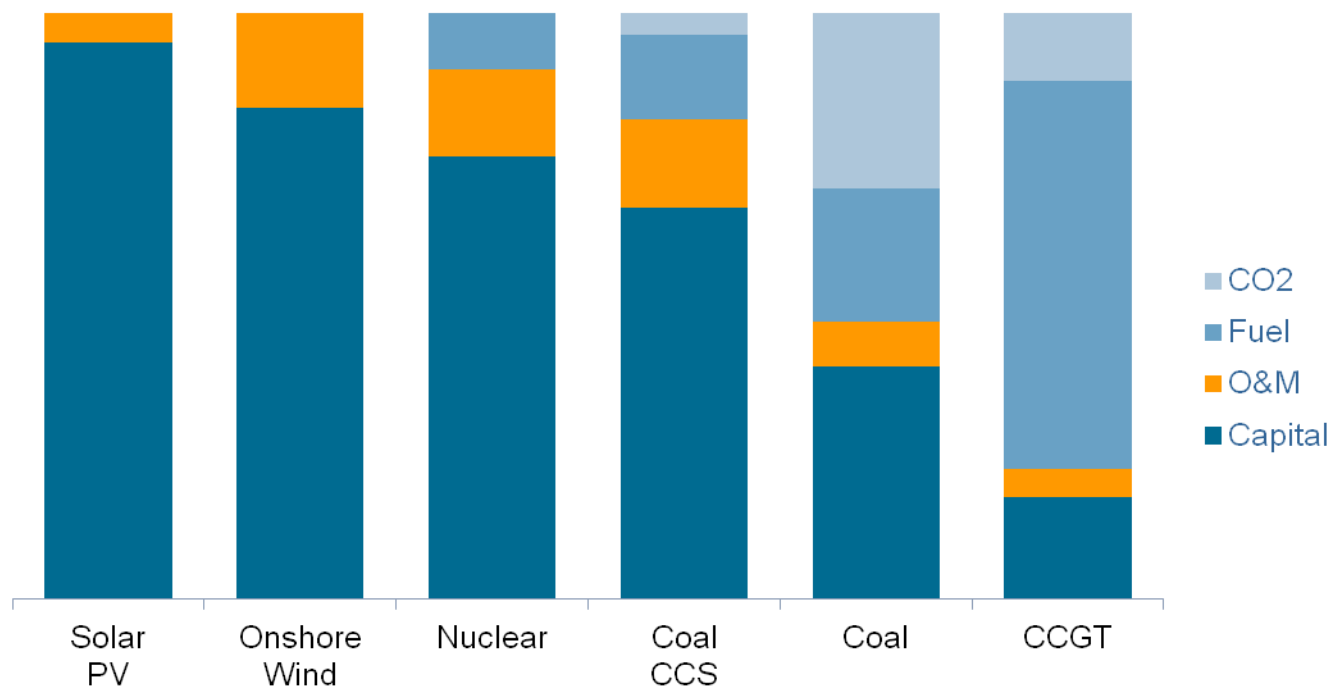
RE Technology	Technology Risk	Resource Risk	Policy Deployment Phase	Typology of investors
Ocean, Adv Biofuels	Very High	Very high	Inception	VC-PE
CSP, Wind offshore	Medium-High	Low Medium	Early Take-off	Consortia
PV, Wind onshore	Low	Low	Take-off	Asset / Project Financing
Hydro, Geothermal	Low	High	Consolidation	Very Large / Consortia

■ Investor type depends on risk profile

- Technology risk, resource risk
- Project-specific risk, including policy and country risk
- Size also matters

Capital-Intensity of Different Technologies

Levelised Cost of Electricity (LCOE), breakdown by cost component* (%)

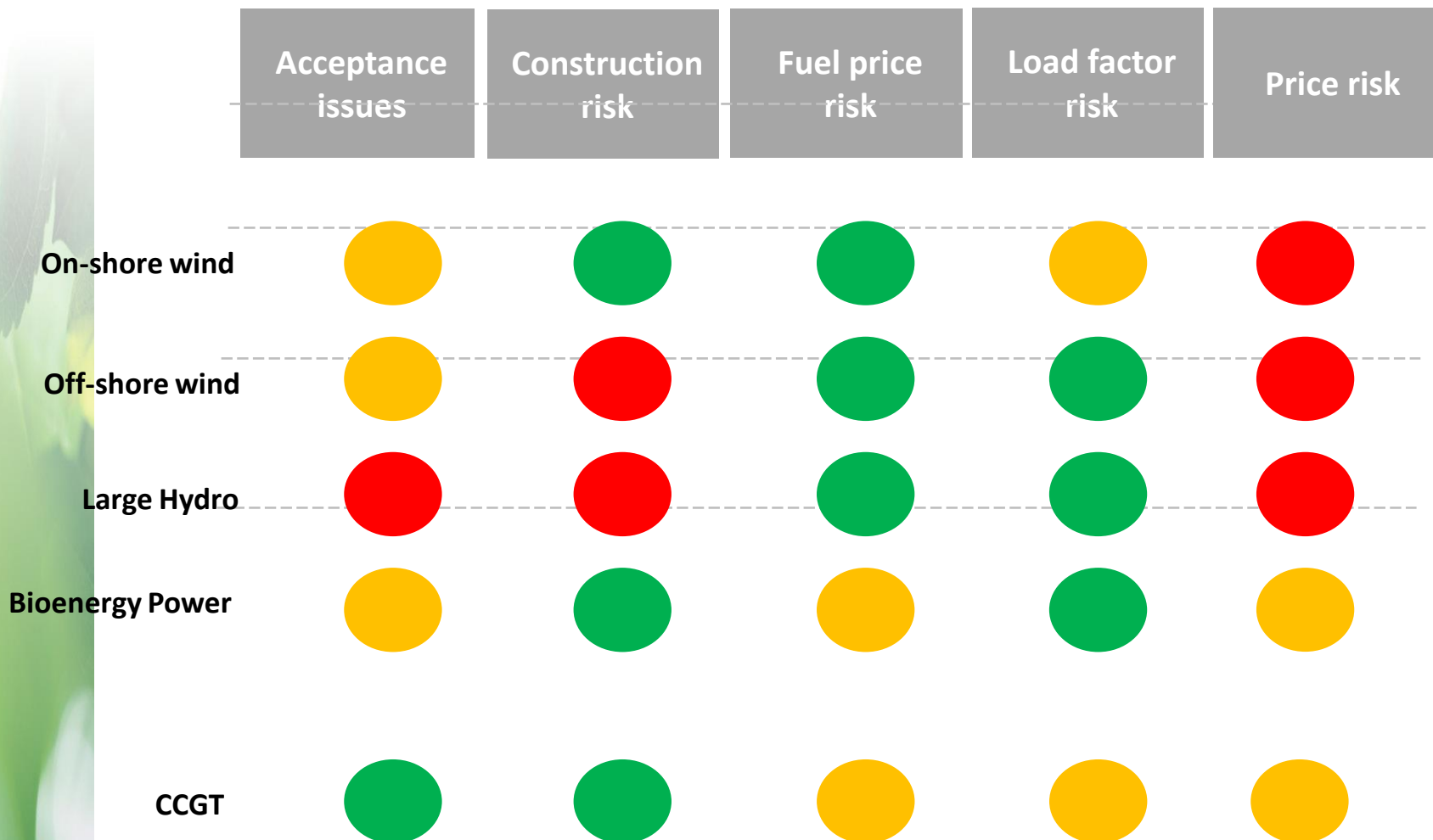


* Projected Cost of Generating Electricity Median case, 10% discount rate

Source: IEA, NEA (2010)

Capital cost for low carbon technologies typically exceeds 75% of LCOE, making financing cost the main driver of competitiveness

Risk Profile of Different Technologies



Source: Preliminary IEA Analysis

Outlook

- **Crucial to scale up investment to foster a portfolio of RE technologies**
 - To increase diversification and security
 - To provide necessary flexibility to power systems

- **Designing policies aiming at de-risking investment more important than (just) providing economic incentives**

- **New public-private-partnership and financing schemes needed to allocate and share risks**