



The Brattle Group

Financial Issues for the Investment Climate in Southwest for New Resources

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Overview

- Southwest portion (of Western Interconnection) is fastest growing region in U.S.

Southwest New Resource and Investment Need

Southwest is fastest growing region in U.S.

	% Pop Increase 2000 to 2030	Rank in Growth	Pop 2030 (Mil)	% of U.S. 2030
.Arizona	109	2	11	2.9%
California - Southern	37	13	28	7.6%
.Colorado	35	14	6	1.6%
.Nevada	114	1	4	1.2%
.New Mexico	15	26	2	0.6%
.Utah	56	5	3	1.0%
6 "Southwestern States"	58	(x)	54	15%
United States	29	(x)	364	100%

Source: U.S. Bureau of Census Projections, April 2005

Note: Only Southern California included, with assumed 60% of CA pop

Overview

- Southwest portion (of Western Interconnection) is fastest growing region in U.S.
- Existing resources diverse, with gas, coal and nuclear, and renewables.
- Western Energy Policy (e.g., Western Governors' Association) is to promote "Clean Energy, a Strong Economy and a Healthy Environment."
- There is large need for new investment, including renewables, energy efficiency, and clean conventional resources.
- This ambitious plan involves considerable uncertainties, which imply risk and risk taking by investors and ratepayers

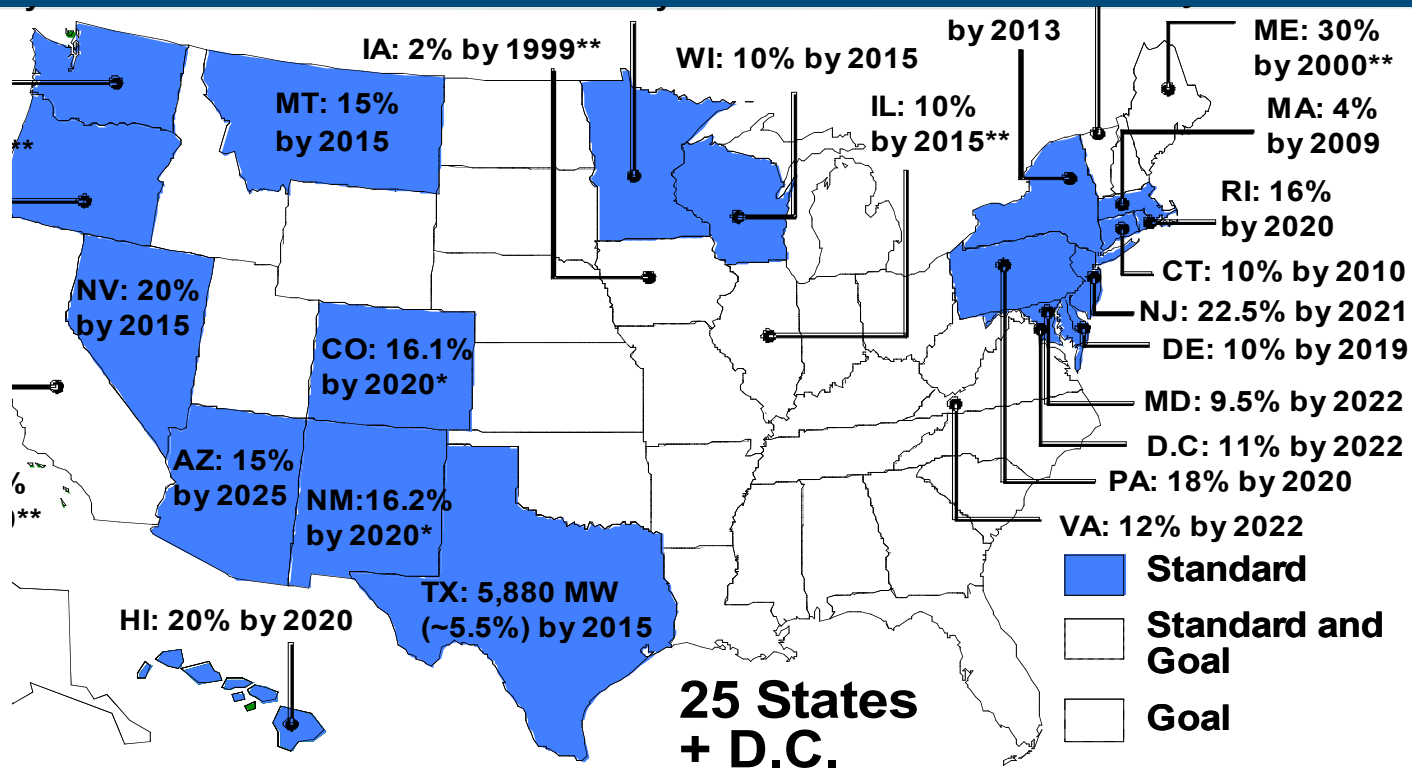
Overview

- Southwest energy procurement practices are matter of state policy
- Hybrid Markets combine regulation and competition
 - ▶ Regulated retail service, except for some large C&I in NV and frozen retail access in CA
 - ▶ Competitive wholesale market used for procurement of some LT resources
 - ▶ Self build can be cost effective
- Future policies may include larger shares for renewables and energy efficiency (EE) and demand response (DR)

Energy Efficiency is the Cleanest Resource

- Resurgence of EE programs around the U.S.
- Financial risks come from uncertainty of cost recovery and lower fixed cost recovery from lower “through put”
- Solutions are EE riders and decoupling
- Several new approaches to making EE and DR a more sustainable business through Shareholder Incentives
 - ▶ CPUC R. 06-04-010 about to decide on Shared Saving approach: Utilities 20%; NRDC 12%; TURN 2%
 - ▶ NV has ratebased EE with return before general rate case of the AFUDC rate and up to 500 bp equity premium in base rates.
 - ▶ Duke proposed a “virtual power plant” approach in NC where it takes on program design, cost and lost fixed revenue risk.

Southwestern States are Leaders in Renewable Resource Development



% by 2020 standard for Xcel Energy, and a 25% by 2025 standard for all other utilities. CO and NM have a 20% by 2020 standard for publicly owned utilities, and a 10% by 2020 standard for other utilities.

to their requirements, CA has a 33% by 2020 goal, IA has a 1,000 MW (~10%) by 2010 goal, IL has a 25% by 2025 goal, ME has a 10% new capacity by 2017 goal

5% by 2025 standard for utilities with more than 3% of retail sales, utilities buying new coal plants or power, and publicly owned utilities; a 10% by 2025 standard for utilities with 1.5-3% of retail sales; and a 5% by 2025 for all others.

Role of Renewables in Southwest

- CA is seeking huge 33% renewable supply by 2020, after equally large EE/DR programs implemented
- AZ, CO, NM, and NV have aggressive RPS goals
- Where clean and diverse energy supply is located presents a challenge for WI system planners
- For example, WI models three scenarios
 - ▶ West coast load centers seek self sufficiency
 - ▶ West coast seeks diversity of fuels/locations on 50/50 basis for incremental needs.
 - ▶ All WI achieves WGA clean diverse energy goals by 2020

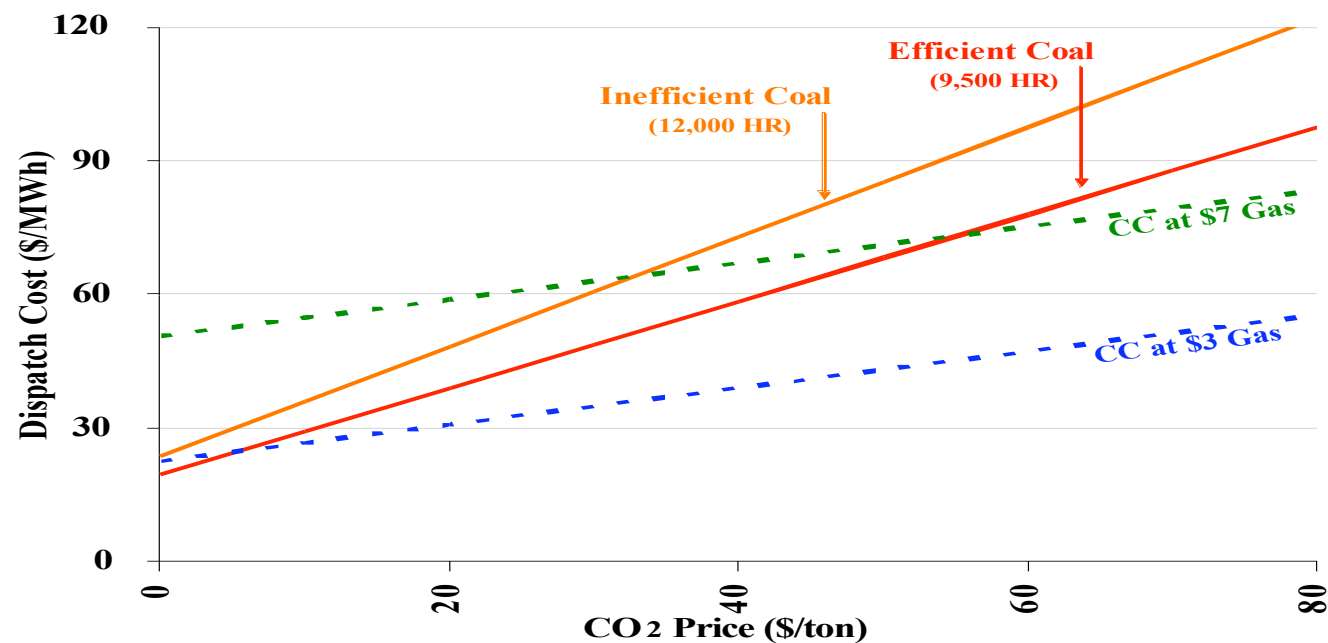
Possibility of Green House Gas Emissions Policy and Limits

- Many believe that scientific evidence is sufficient to prompt some actions to constrain GHG emissions
- A mandatory, flexible policy framework is being advocated – U.S. Climate Action Partnership
- CO2 reductions will come from energy efficiency and long run technology substitution
- The current and projected high price of natural gas means that a much higher CO2 “price” may be required to cause significant fuel switching

High Prices of Nat Gas and Carbon

- Just a few percent substitution for coal occurs unless CO₂ prices get high (>\$30/ton)

•Source: Brattle, "The Economics of U.S. Climate change Policy," March 2007.



Role of Base Load Coal and Nuclear

Nuclear vs. Supercritical Pulverized Coal vs. Integrated Gasification Combined Cycle (IGCC)

- Nuclear restart
 - ▶ EPA Act tax credits & loan guarantees; NRC's new licensing
 - ▶ Longer construction (>8 yr); "Govt must take risk" – Morgan Stanley
 - ▶ No western companies in lead group
- PC
 - ▶ NPC NV project
 - ▶ Carbon pressure mounting
 - ▶ Back end carbon sequestration being developed

Role of Base Load Coal and Nuclear

- IGCC
 - ▶ Several utilities and IPPs are moving forward
 - ▶ Pre combustion carbon sequestration may have cost advantage
- Base load is going to need regulatory support
- Gas fired CCGT and CT are being installed

Perspective of Financial Markets

- Financial markets = purchasers of equity and debt securities of would-be Suppliers (project developers) of new generation in Southwest region.
- Suppliers make investment decisions (what plants to invest in) and financing decisions (how to raise the capital)
- Willingness to invest depends on:
 - ▶ Stable investment climate
 - ▶ Reasonable cash flow stream
 - ▶ Clarity of contract terms

Stylized Model of Financial Value for Individual Projects

- Electric assets are long-lived, risky assets
- Value is the Net Present Value of long stream of cash flow

$$= CF(1) + CF(2) / (1+R) + \dots + CF(L) / (1+R)^L$$

<----- Stream of Cash Flows ----->

CF(t) = cash flow per time period, often negative initially

R = appropriate, risk-adjusted discount rate

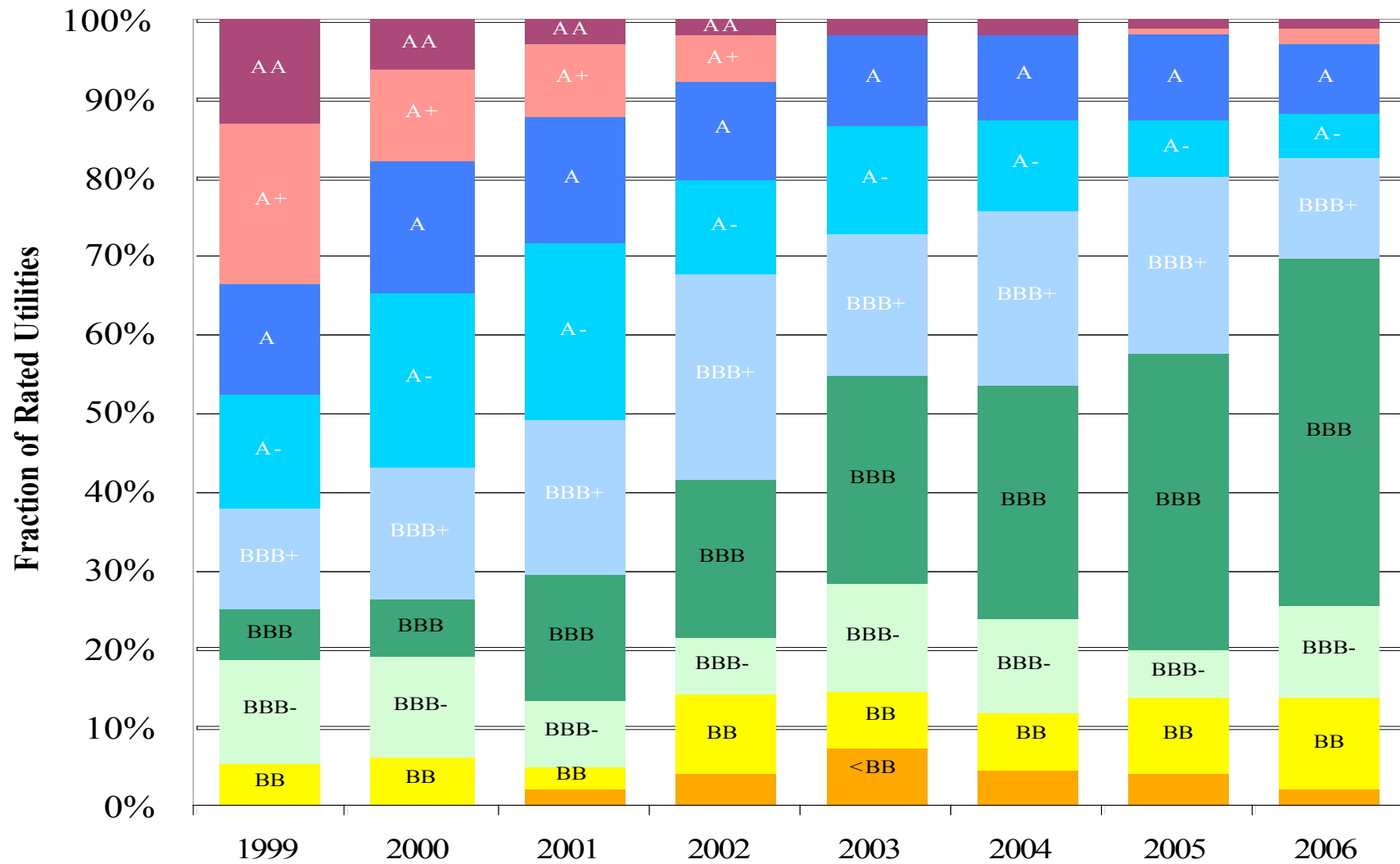
L = economic life of the electric asset

- Net Present Value Decision Rule: Accept investments that have positive net present values.

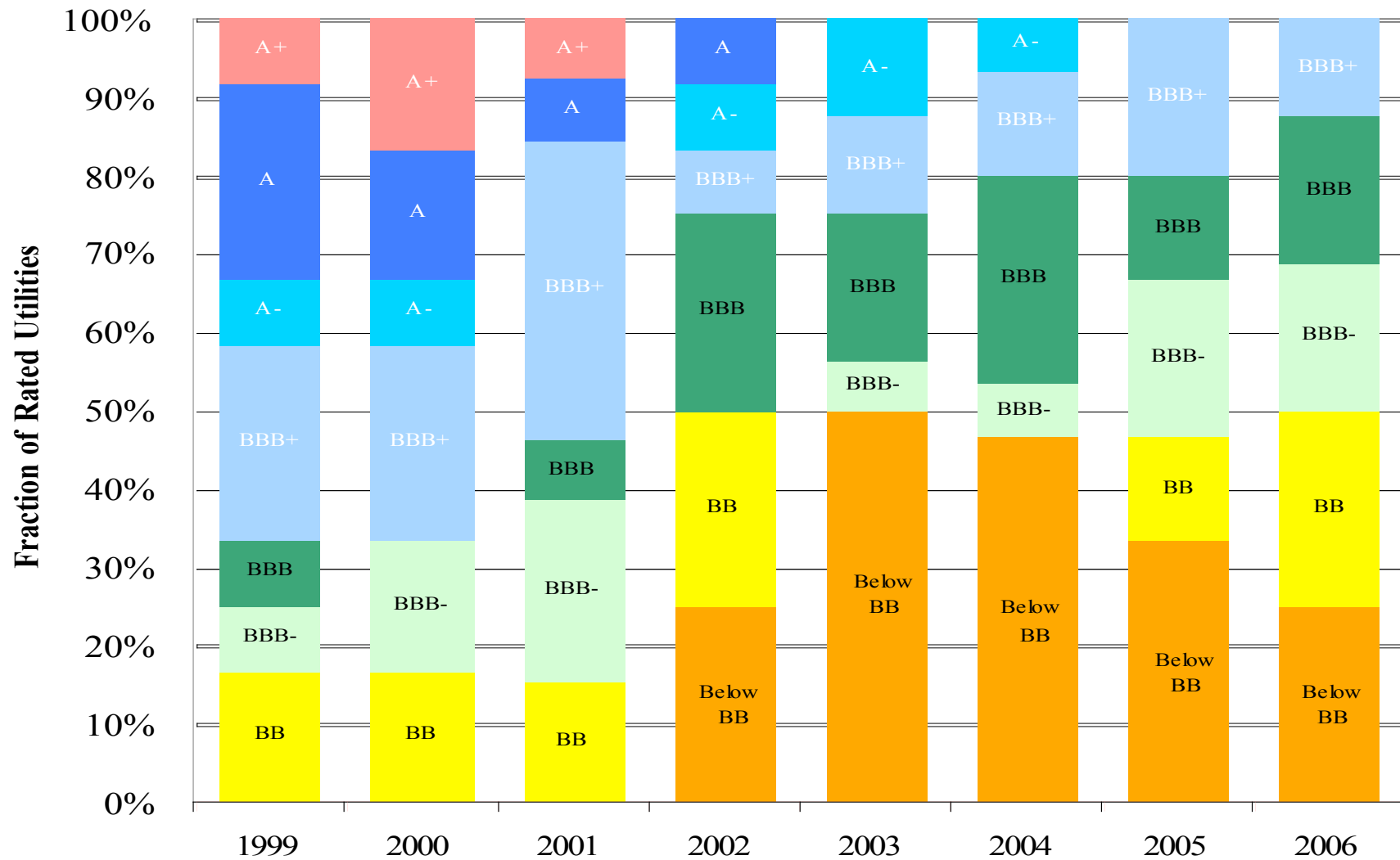
Industry Level Perspective – Credit Rating Agencies

- U.S. utilities and IPPs have both seen average credit rating drop from 1998 to 2002.
- IPPs and marketers were nearly as credit worthy in 1998, but dropped precipitously in 2002-3.
- Both have stabilized since 2003.

Credit Rating of Electric/Combo Utilities 1999 - 2006



Credit Rating History of IPPs and Traders 1999 - 2006



Financial Markets View of Risk Balance in Long-Term Contracting

- “For many years, S&P’s Rating Services has viewed PPAs in the U.S. utility sector as creating fixed, debt-like, financial obligations that represent substitutes for debt-financed capital investments in generation capacity.”
 - ▶ “S&P’s Methodology For Imputing Debt for U.S. Utilities’ Power Purchase Agreements,” *Ratings Direct*, May 7, 2007.
- The other side of the coin is that risk of the cash flow stream for the Supplier is significantly reduced, if the counter-party is credit worthy.
- Mitigation of Imputed Debt can be determined.
- Some states have recognized Imputed Debt as an factor in evaluating PPAs, and review it in setting the IOUs cost of capital.
- This may be an issue in new clean coal plants.

Conclusions

- Southwest states have a fast growing need for new investment, but in a way that promotes “Clean Energy, a Strong Economy and a Healthy Environment” (Western Governors’ Clean and Diversified Energy Initiative)
- Financial markets see a workable investment climate
 - ▶ Generally credit-worthy or near C-W companies
 - ▶ Regulatory climates that have IRP
 - ▶ Pursuing stated goals backed by state policy
- Financial markets also see a range of risks of individual projects.