



GLOBAL
CCS
INSTITUTE

DRAFT DISCUSSION PAPER

STRATEGIC FRAMEWORK

STRATEGIC FRAMEWORK—DRAFT DISCUSSION PAPER

CONTENTS

INTRODUCTION	3
CONTEXT	4
Role of CCS in global climate change response	4
Objectives of the Institute	5
THE INSTITUTE'S STRATEGIC FRAMEWORK	6
Rationale for adopting a Strategic Framework	6
The Strategic Framework	6
ELEMENTS OF THE STRATEGIC FRAMEWORK	8
Enabling strategies	8
1. Policy, regulatory and legal	8
2. Finance and commercial	9
3. Public awareness	9
4. Technical	9
5. Capacity building	9
6. Knowledge sharing	9
Projects Strategy	10
Regional profiles and global services	10
Member services	11
PROGRAM DESIGN	12
Current status of work programs	12
Projects strategy	12
Enabling strategies	12
Member services	13
Regional profiles	13
Establishment and operation of Member working groups	13
Evaluation and monitoring	13

INTRODUCTION

The overarching objective of the Global CCS Institute is to accelerate the broad deployment of commercial carbon capture and storage (CCS), ensuring that the technology plays a role in responding to the world's need for a low carbon energy future. The Institute has adopted a Strategic Framework to describe its activities in pursuit of that objective. The Framework lays out the Institute's activities categorised into four workstreams:

- *enabling strategies;*
- *projects strategy;*
- *regional profiles and global services; and*
- *Member services.*

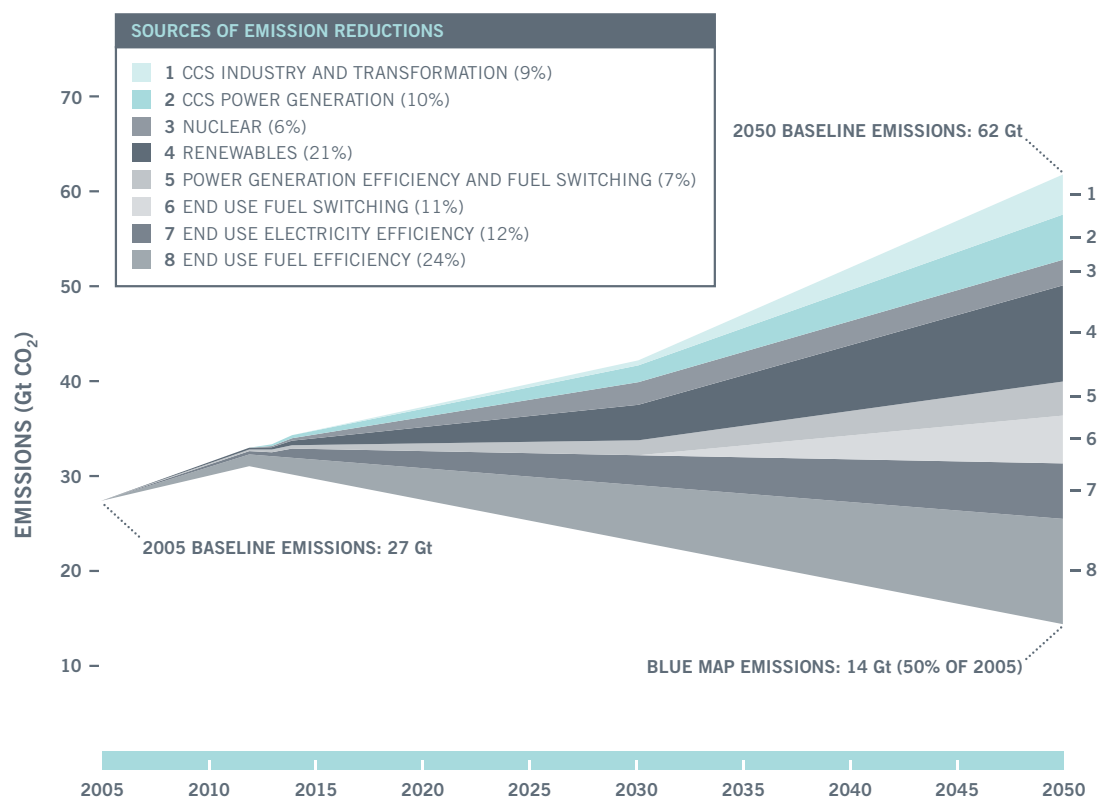
This paper is intended to introduce the Strategic Framework to the Membership in the context of the Institute's objective to accelerate the deployment of CCS. It summarises each of the four elements of the framework and provides an update of the Institute's progress delivering against the framework.

CONTEXT

Role of CCS in global climate change response

CCS is expected to play a vital role in global efforts to curb greenhouse gas emissions. The International Energy Agency (IEA) scenario modelling suggests this will be a significant challenge for the CCS community in the near and longer terms. The IEA estimates that, to make a genuine contribution to the amelioration of global warming, 100 industrial-scale projects may need to be operational by 2020 and 3,400 by 2050—equivalent to 10Gt of annual CO₂ sequestration and 19 per cent of total global emissions reductions (Figure 1).

FIGURE 1: GLOBAL CARBON EMISSIONS AND GHG EMISSIONS REDUCTIONS

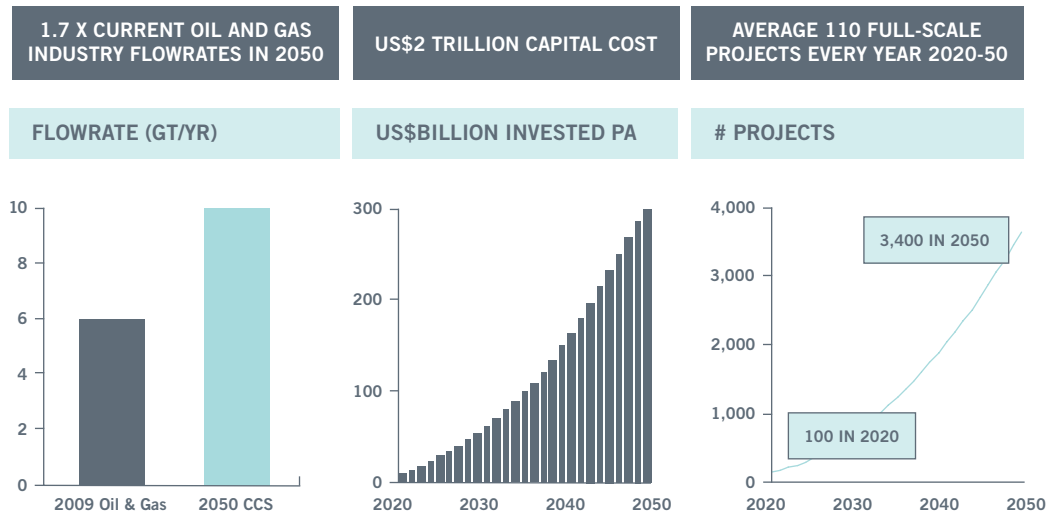


¹IEA BLUE MAP SCENARIO: THIS SCENARIO IS CONSISTENT WITH STABILISING CO₂ CONCENTRATIONS AT 450PPM, WITH AN ASSOCIATED GLOBAL RISE IN TEMPERATURE OF TWO TO THREE DEGREES CELSIUS, BUT ONLY IF THE REDUCTION IN ENERGY-RELATED CO₂ EMISSIONS IS COMBINED WITH DEEP CUTS OF GREENHOUSE GAS EMISSIONS FROM NON-ENERGY SOURCES. SOURCE: INTERNATIONAL ENERGY AGENCY 2008, ENERGY TECHNOLOGY PERSPECTIVES: SCENARIOS AND STRATEGIES TO 2050.

This represents a massive task whereby the CCS community must over the next four decades (see Figure 2):

- surpass the flow rates for the global oil and gas industry;
- secure over US\$2 trillion in investment; and
- construct an average of over 100 new projects per year between 2020 and 2050.

FIGURE 2: THE CCS CHALLENGE BY 2050



NOTES: O&G INDUSTRY MASS FLOWRATES: 3928.8 MTO + (3065.6 BCM GAS)*0.7KG/T = 6.07GT/YR; CAPITAL COST = 3400 X \$608MILL (AVERAGE ADDITIONAL CAPEX FOR CCS POWER PLANT AT SCALE 500MW)

Source: BP Statistical Review of World Energy; Strategic Analysis of the Global Status of Carbon Capture and Storage; GlobalData, "Global Oil and Gas Capital Expenditure Outlook – 2010"

Given the magnitude of these challenges, the Institute was established to accelerate the broad deployment of integrated, commercial-scale CCS.

Objectives of the Institute

The objective of the Institute is to accelerate the commercial deployment of CCS. It sees two preconditions to this:

- a global portfolio of integrated CCS demonstration projects to demonstrate the technology at industrial scale. An interim goal of the Institute is to accelerate the portfolio of at least 20 industrial scale, integrated demonstration projects; and
- a set of 'enablers' in place to facilitate commercial roll-out: policy, financial, public awareness, technical, capacity building and knowledge sharing.

THE INSTITUTE'S STRATEGIC FRAMEWORK

Rationale for adopting a Strategic Framework

The Institute is adopting a Strategic Framework to guide its activities and ensure that it:

- drives the interim goal of accelerating development of a portfolio of demonstration projects; and
- lays the foundations for successful longer-term global CCS deployment.

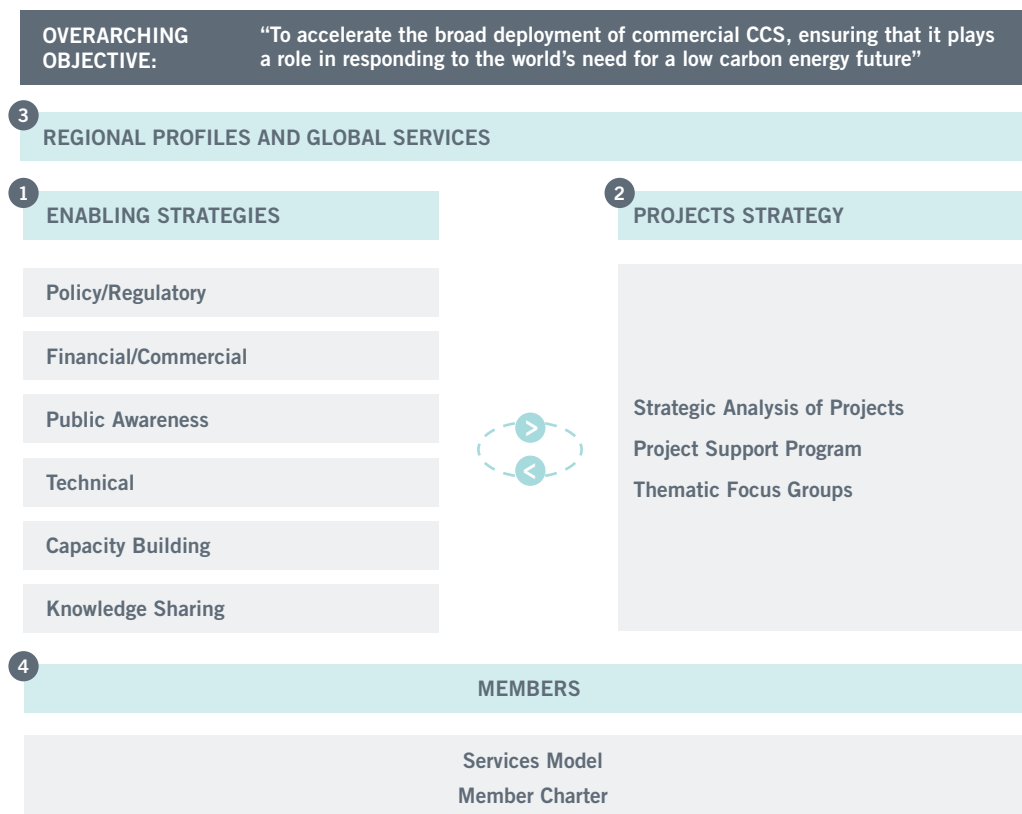
The Strategic Framework endorsed by the Global CCS Institute Board includes work on demonstration projects and on strategic enablers to support the longer-term commercial deployment of CCS. These two elements of the Framework are complementary and together support achievement of the Institute's overall objectives.

The Strategic Framework

The Institute's Strategic Framework (Figure 3) has four elements that together address its near and longer term objectives:

- *enabling strategies* will help to address the barriers to industrial-scale demonstration projects and global deployment of CCS;
- *projects strategy* will ensure the Institute's resources are most effectively used to accelerate projects in the demonstration phase by providing project support;
- *regional profiles and global services* will provide a set of regional 'lenses' to ensure the Institute's activities are aligned with local needs; and
- *Member services* will ensure Members have access and input to the Institute's work.

FIGURE 3: GLOBAL CCS INSTITUTE STRATEGIC FRAMEWORK

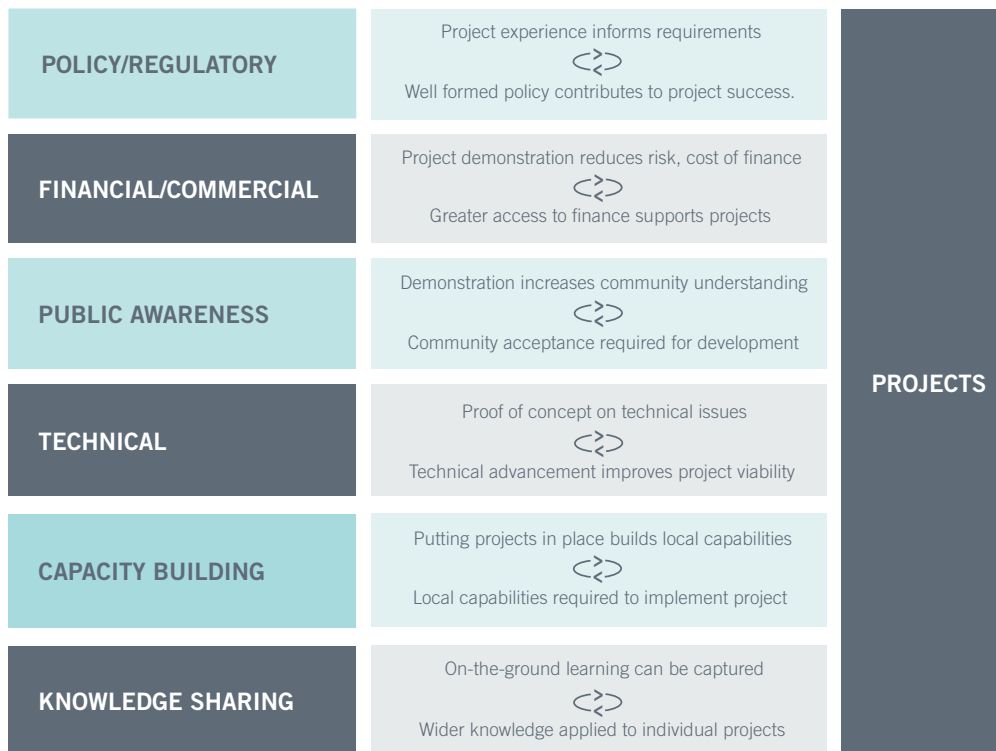


The four elements of the Strategic Framework are designed to reinforce and support one another. In particular, there is a virtuous circle between the Institute’s work on demonstration projects and its work on enablers for long-term CCS deployment.

Progress has already been made, in particular in the Projects Strategy, upon which the Institute has been primarily focused in its first year of existence. The Institute has also assessed the status of demonstration projects around the world. It has published reports including the *Strategic Analysis of the Global Status of CCS*, prepared by a consortium headed by WorleyParsons, and *An Ideal Portfolio of CCS Projects and Rationale for Supporting Projects*, prepared by L.E.K Consulting. The Institute is currently involved in the task of providing targeted support to projects with the implementation of its *Project Support Program*.

The experience and knowledge that the Institute gains through its involvement in projects will strengthen the depth and quality of its work on enablers. Similarly, the understanding it gains of the required enablers will enhance the quality of its support for projects (as set out in Figure 4).

FIGURE 4: REINFORCING RELATIONSHIP BETWEEN ENABLING STRATEGIES AND PROJECTS



ELEMENTS OF THE STRATEGIC FRAMEWORK

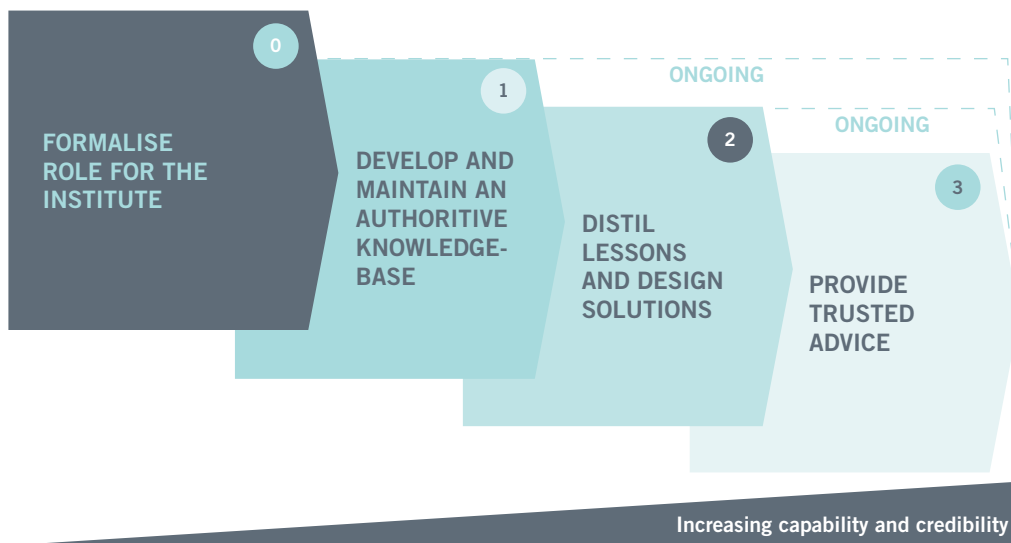
Enabling strategies

Several enablers must be put in place to support the near-term delivery of demonstration projects and the longer-term commercial deployment of CCS. The Institute is well placed to identify and develop these enablers. For each enabler, the Institute is applying a four-phased approach to its developing its work programs.

1. *Formalise the role for the Institute:* Understand the underlying issues in each of the enablers and determine what role the Institute can most effectively play in addressing them.
2. *Build an authoritative knowledge-base:* Perform or commission the research required to develop the enablers and make that the results available to Members.
3. *Distil lessons and design solutions:* With Members, distil lessons from the Institute's research and develop positions on the enablers.
4. *Seek to become a trusted advisor:* As the Institute builds its reputation and expertise, use its knowledge base to provide trusted, impartial advice—for example, by providing data and information to the Project Support Program and providing expert advice to Members when requested.

The Strategic Framework provides the foundation for work in each of these areas. Broadly, the Institute will follow a four-step pathway to achieve its objectives as shown in Figure 5.

FIGURE 5: BROAD APPROACH TO ENABLING STRATEGIES



1. Policy, regulatory and legal

The Institute's activities are directed to global CCS deployment based on policy approaches that support social and economic development, positive environmental outcomes and the rapid development of the CCS industry.

The Institute will direct its efforts in this area to supporting progress on global climate change policy, identifying the policy action needed to accelerate the deployment of CCS in developed and developing countries, and working to address policy, regulatory and legal barriers to CCS deployment.

The Institute is already engaged in activities in these areas, at a national level and globally. It will continue to develop its expertise with the objective of becoming the key 'go to' agency when governments, industry and communities require information or advice on policy and regulatory issues associated with CCS.

2. Finance and commercial

Integrated, commercial-scale CCS projects present complex financial and commercial challenges for policy makers, financiers, and project proponents. Current models are at an early stage of development and their workability and effectiveness are yet to be demonstrated. There is an urgent need for a single, objective source of knowledge in this area. The Institute will focus on two broad issues.

1. *Funding volume and direction.* The Institute will:

- track the progress of government programs to fund industrial-scale demonstration projects and compare this to progress to the Institute's evolving view of the funding required to demonstrate CCS broadly, leveraging the Institute's continuing work on an ideal portfolio and project costs;
- work with partner organisations to design vehicles/mechanisms for meeting any funding gap; and
- support discussions about funding for CCS mechanisms by providing an impartial fact-base.

2. *Funding, financing and commercial structures.* The Institute will:

- document and codify the state of the art in funding, financial and commercial structures, both within CCS industry and analogous industries;
- develop model funding structures for government programs, and financial/commercial structures for project consortia. The models will address the issues in a range of scenarios, considering for example, differences across jurisdictions, and differences between demonstration and commercial phases; and
- offer support, as requested, for governments in designing funding programs, for project consortia in designing projects and investors.

3. Public awareness

Public support for CCS technologies will help drive their uptake. Conversely, public concern about the efficacy, safety or value of CCS could see projects delayed or even abandoned. The Institute will develop a strategy to support Members in building public awareness of CCS and its role in reducing GHG emissions, and in building public support for individual projects.

4. Technical

CCS technologies must be safe, efficient and cost-effective. Research efforts and demonstration projects must be evaluated to identify the technologies that meet these criteria and are most effective in reducing GHG emissions.

5. Capacity building

The challenge of constructing, operating and regulating the 3,400 CCS projects as described by the IEA requires a deep and skilled workforce across many functions. However, many countries are only now beginning to develop the capabilities required. The Institute will develop a strategy and program to build capacity through a range of activities (e.g. workshops, secondments) aimed at equipping individuals, organisations and governments with the required skills and knowledge, particularly in developing economies. The Institute's work in this area is already underway, and involves:

- providing funding to partner organisations to undertake capacity building;
- responding to ad-hoc requests for funding or assistance in capacity building; and
- providing a structured program of workshops, case studies and research projects in four to six countries.

6. Knowledge sharing

Global collaboration and communication will be needed to accelerate CCS projects to meet 2020 goals. A consistent set of principles, protocols and dissemination mechanisms will foster effective knowledge sharing across CCS demonstration projects. The Institute is working with stakeholders to establish and prioritise knowledge sharing needs and provide support for the establishment and maintenance of knowledge sharing systems and dissemination channels.

As a key part of the Institute's knowledge sharing program it will seek to play a role in internationalising the knowledge generated by national programs. For example, the Australian government is progressing its AU\$2.5 billion program to finance 2–3 CCS 'flagship' projects in Australia and has nominated the Institute to be the mechanism for sharing knowledge generated from the program. The Institute will offer to play a similar role in other national and super-national programs in order to ensure that the global CCS community receives the maximum benefit from the demonstration programs.

Projects Strategy

A key component of the Institute's objective is the interim goal of accelerating a portfolio of demonstration projects. This goal is central to the Institute's Projects Strategy, which aims to directly accelerate projects in the demonstration phase by providing project support, as well as reinforcing work on enabling strategies, by:

- providing a vehicle to distribute the knowledge built within the enabler programs; and
- adding to the knowledge base itself through practical experience with projects.

The Institute's Projects Strategy includes three mutually supporting component programs, as detailed in a separate paper.

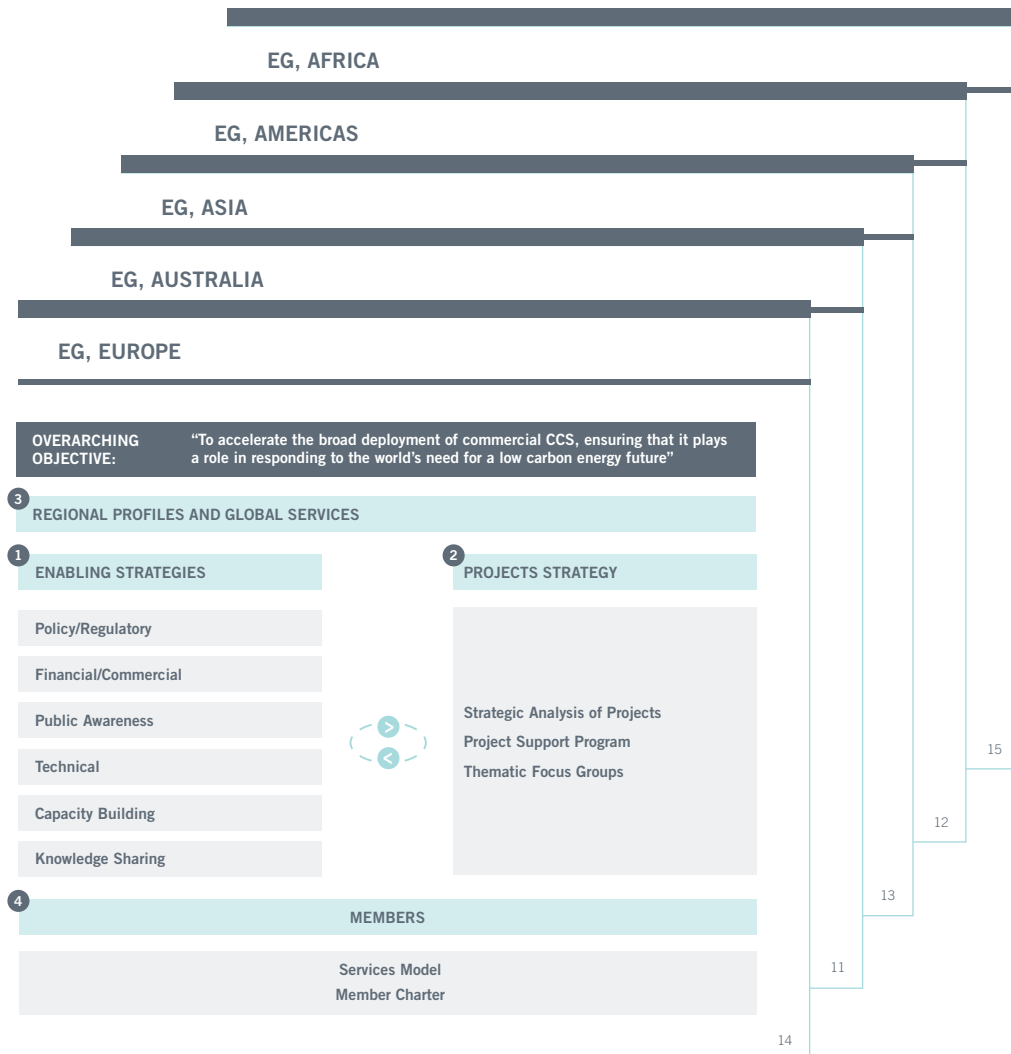
1. *Strategic Analysis of Projects*: The Institute will build and maintain a comprehensive view of the developing pipeline of demonstration projects, their progress and barriers. It will use analysis of the global project portfolio to identify how the it can best act to accelerate broad CCS deployment;
2. *Project Support Program*: The Institute will offer targeted financial and knowledge based support in order to overcome key barriers associated with demonstration projects. It will distil lessons from these projects to be able to better inform and support other CCS projects facing similar challenges.
3. *Thematic Focus Groups*: The Institute will form networks around common themes, as a means to develop and share best practice amongst project proponents.

Regional profiles and global services

Different countries and regions are at different stages in the CCS development pathway and have different contexts for CCS deployment (e.g. different energy markets, different regulatory frameworks). As a result, the Institute must tailor its activities and support to meet particular regional needs. It intends to deliver on its commitments (including in relation to the enabling strategies and project support) to Members locally—in their own jurisdiction.

The Institute will develop a series of profiles to provide regional 'lenses' on the enabling strategies and project work needed to support its overall objectives. These regional profiles will be managed by Institute teams, based in the region with specific local knowledge and established networks and will form the delivery model for the Institute's Member services. In doing so, it will continue to be guided by its Strategic Framework, as illustrated in Figure 6.

FIGURE 6: REGIONAL PROFILES AND GLOBAL SERVICES



Member services

As a Member-based organisation, the Institute is developing a Member services approach to its work on enabling strategies and projects.

A Members charter, created with input from Member organisations, will define the services the Institute will provide to Members. These will likely include knowledge sharing, information management through the enabling strategies and project facilitation through the Projects Strategy.

PROGRAM DESIGN

The Strategic Framework is designed to lay out the Institute's activities in pursuit of its objective of accelerating the broad commercial deployment of CCS. In order to prioritise and conduct these activities effectively, the Institute will:

- formalise work programs for each of the six enabling strategies and the Projects Strategy;
- develop the enabling strategies in collaboration with Working Groups comprised of Members and other experts; and
- evaluate and monitor its progress on an ongoing basis.

Current status of work programs

The Institute has begun formalising its work programs for each element of the Strategic Framework. This builds on work which is already underway. To date, the Institute has prioritised its Project Support Program (as part of the Projects Strategy) and also work on two key enabling strategies: (i) financial and commercial; and (ii) policy, regulatory and legal. Initial work programs for these elements will be presented to Members at the Pittsburgh Members' Meeting. Work programs for other elements of the Strategic Framework will be completed by the end of 2010.

The process for developing work programs and the current status of work on each element of the Strategic Framework is described below.

Projects strategy

Given the need for rapid action to meet its goals, the Institute began execution of its Project Support Program immediately after its launch. It commissioned a global strategic analysis of CCS projects which included a project stock take and also developed a view on the composition of an 'Ideal Portfolio' of CCS demonstration projects.

Under its Project Support Program, the Institute will provide targeted financial support to projects around the world in order to assist industrial consortia address specific barriers to CCS projects. Going forward, the Institute will increasingly augment its support to projects with the delivery of knowledge based support, as well as potentially playing a catalytic role in project development. In consideration for the project support, project proponents will help support the Institute's knowledge development and sharing activities.

The Institute will present a discussion paper outlining its Projects Strategy to Members for discussion at the meeting in Pittsburgh, with a view to finalising the accompanying work program by June 2010.

Enabling strategies

For each enabling strategy, the Institute will produce a three year work program setting out specific areas of focus and a series of activities for it to pursue. The process for developing each work plan is as follows.

1. **Prepare a preliminary draft discussion paper and proposed work program.** The Institute will prepare a draft discussion paper and work program based on its understanding of the key issues and initial stakeholder consultation.
2. **Gather Members' views and build engagement.** The Institute will obtain feedback from Members on the initial draft discussion paper and work program through working groups and at Member Meetings.
3. **Finalise work program.** A final draft discussion paper and work program will be prepared taking account of Member feedback. The Institute Board, informed by the discussion paper, will consider and endorse a work program.

The Institute's work on the enabling strategy will be based around the Board-endorsed work program. Member working groups will be established for each enabling strategy. The working groups will provide guidance on the delivery and direction of this work.

The Institute began work on two key enabling strategies (financial and commercial, and policy, legal and regulatory) in March 2010 and the results have been tested with some experts in a roundtable discussion. These strategies will be presented at the Pittsburgh Members' Meeting with a view to incorporating feedback from Members in May 2010.

Member services

A draft Members' Charter is currently being developed through a continuous process of Member consultation, with a view to being finalised in June 2010.

Regional profiles

Work on regional profiles will be undertaken in conjunction with the Institute's continued roll-out of a regional service delivery model. This will be an ongoing process.

Establishment and operation of Member working groups

As a Member-based organisation, the Institute's work programs will be structured to encourage regular input from its Members. A key aspect of this approach will be the establishment and operation of Member working groups to support the work of the Institute on all enabling strategies.

Each working group will be chaired by a Member of the Institute's International Advisory Panel (IAP) and comprise up to 12 individuals from Member organisations as well as external experts where appropriate. Members will be invited to nominate individuals to join the working groups with the criteria for acceptance being relevant expertise and regional representation.

Box 1 describes the proposed purpose and operation of the Member working groups.

BOX 1 – MEMBER WORKING GROUPS: PROPOSED PURPOSE AND OPERATION**Purpose**

The purpose of each Member working group is to:

- provide input into the development, and on-going refinement, of the Institute's work programs;
- provide input on content, including views on appropriate areas for research and analysis;
- review and discuss draft materials prepared under the work program; and
- monitor progress against the work program.

Member working groups will meet twice per year.*

Operation

The Institute will provide support for each Member working group. This will include:

- undertaking consultation, research and analysis in accordance with the work program;
- keeping the Member working group informed of progress with its activities;
- producing reports, discussion papers and presentations for the Member working group to consider; and
- co-ordinating a twice yearly meeting* of the Member working group.

* These meetings could take place by teleconference or videoconference.

Evaluation and monitoring

The Institute will use the finalised work programs (and input from Member working groups in the case of the enabling strategies) to monitor and evaluate its progress. This information will enable the Institute to establish whether activities are progressing as planned and provide a basis for defining success. Feedback from the various working groups will also be used in setting the ongoing directions for work in the enabling strategies.

At its Members' Meetings, the Institute will report on its progress in each element of the Strategic Framework.