

CHALLENGE PROGRAM ON CLIMATE CHANGE

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ABSTRACT

The World Development Report (2008) concludes that Climate Change (CC) will have far reaching consequences for agriculture that will disproportionately affect the poor. We are seeing some of the beginnings already – greater climatic risks that are imposing economic losses and undermining food security. Enhancement of adaptation measures is urgently needed to reduce these risks facilitated by international, national and local action. Agriculture is also a contributor to CC; there are opportunities to harness the untapped potentials of agriculture to reduce emissions.

The Consultative Group for International Agriculture Research (CGIAR) Centers and their numerous National Agriculture Research System (NARES) partners in government and civil society organizations have been helping farmers cope with the effects of variable and severe weather for nearly three decades. They have generated a wealth of improved crop germplasm, knowledge, technologies, methods and policy analysis, which can lessen the vulnerability of marginalized rural people and places through more sustainable management of crops, livestock, soils, water, forests, fisheries and biodiversity. They also undertake research to mitigate against climate change (CC) gases particularly through policies on sustainable forestry, acquisition of C in tree and crop systems, reduced N₂O and methane gas emissions and on gathering scientific data to facilitate various systems for payment of environmental service (PES).

This work has largely been undertaken without full engagement with scientists dealing with Global Environment Change (GEC) whose research is structured around 4 international research programmes: DIVERSITAS (biodiversity)¹, IGBP (biogeochemistry)², IHDP (human dimensions, social sciences)³ & WCRP (climate sciences)⁴. These four Programmes have come together to form the Earth Systems Science Partnership (ESSP).

The concept of the CGIAR “Challenge Program” (CP) was to bring together the right partners to address a major global challenge with a focus on outcomes in a fixed time frame.⁵ The soon-to-be-formed and new CP “Climate Change, Agriculture and Food Security (CCCP)” does just that. The global challenge is known to all of us; because so many of the rural poor in developing countries depend on agriculture, it is one of the central arenas in which the threat posed by climate change must be confronted. The efforts of CGIAR and NARES can provide part of the basis for action, but they must be more sharply focused on the predicted and most vulnerable and better coordinated. The ESSP partner brings that dimension.

The CCCP’s main objectives are (i) to close the critical gap in knowledge on the nexus of food security, livelihood and environmental outcomes in the face of CC, (ii) to develop and evaluate options for adapting to CC for agriculture development and to inform policy and development strategies and (iii) to assist farmers, policy makers, researchers and donors to monitor, access and adjust their actions in response to CC.

The work in the initial phase will be at three (3) focus regions – East Africa, West Africa and Indo-Gangetic Plain selected based on the criteria of (i) poverty and vulnerability, (ii) complimentary set of social, cultural and institutional contexts, (iii) complimentary climatic contexts with different temporal and spatial scales of climate variability and degree of predictability, (iv) significant but contrasting climate-related problems and opportunities for intervention and (v) governance and institutional capacity that favour likelihood of generating transferrable results. Within each region

¹ <http://www.diversitas-international.org/>

² <http://www.igbp.net/>

³ <http://www.ihdp.unu.edu/>

⁴ <http://wcrp.wmo.int/wcrp-index.html>

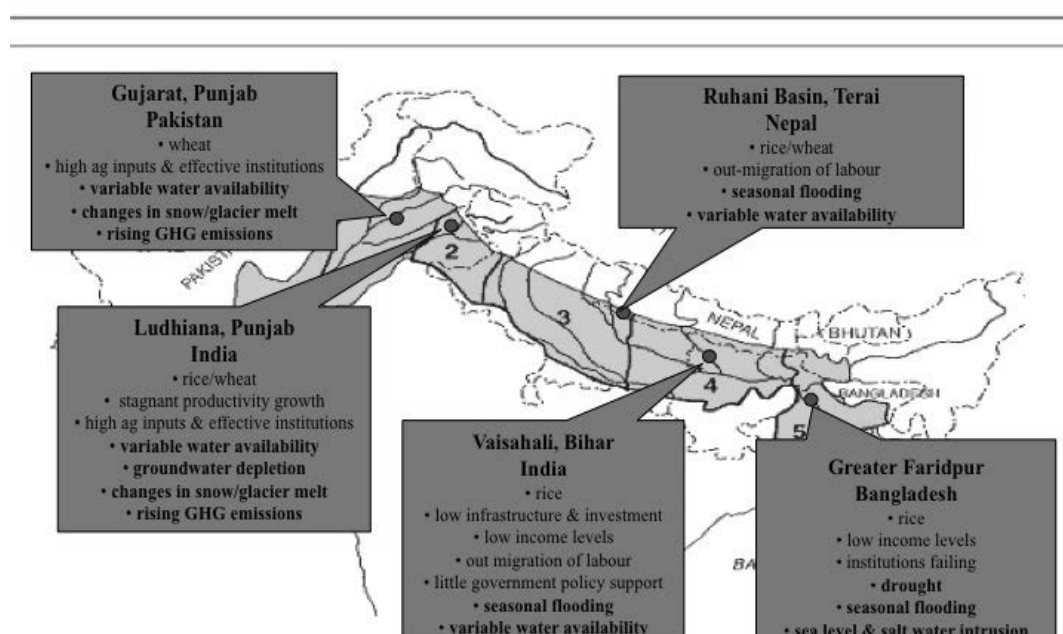
⁵ <http://www.cgiar.org/impact/challenge/index.html>

work will be undertaken at sites selected along a gradient of (a) anticipated temperature and precipitation change, (b) current and predicted land use pressure and (c) different land tenure and institutional arrangements. An example of the planned cross sector sites is shown in Fig.1 for the Indo-Gangetic Plain region.

Success hinges on maintaining the active involvement of all three communities—CGIAR, NARES and GEC (and their respective donors) so as to effectively address the niche of the interface and the ‘added value’ among their respective agendas. The CCCP is not aimed at “business as usual” for any one group; getting this focus is crucial. The CP also has an ethical responsibility that it must clearly define what part of the global challenge it can address and what outputs and plausible outcomes it can deliver in the time frames of the CP.

In addition to the scientific and developmental potential from the “added value” through the Partners, the CP also offers efficiencies in financing. The research of the GEC is typically funded by science agencies (e.g. research councils, etc) and the research for development of the CGIAR by development agencies. The CP has the potential to interest both investors.

Figure 1. Proposed CCCP bench mark sites across the Indo Gangetic Plain and the characteristics for cross sectoral analysis.



KEYWORDS

Adaptation, Mitigation, Agriculture, Global Environmental Sciences, Poverty.

REFERENCES

Adaptation to and mitigation of climate change in agriculture, pp. 200-201 In The World Bank Development Report: Agriculture for Development (2008).
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A CGIAR Challenge Program on Climate Change

By K S Fischer,
For the Science Council
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Direction Setting for the CGIAR

- CGIAR mission evolved from increasing the "pile of food", through increasing food while maintaining the NR base, to alleviating poverty (through agricultural science)
- Priority setting has changed from a TAC congruence modelling of commodities, through the "free market" to an emerging set of Priorities (or strategic opportunities) linked to development outcomes



Aligning CGIAR System priorities to the Climate Challenge

	SP1	SP2	SP3	SP4	SP5	SP6	SP7	SP8	SP9	SP10
CLIMATE CHANGE RESEARCH	1a food GR	2a yield and qual res.	3a water prod crop/field	4a forests	5a agro-ecol farm lev.	6a fruits & veg	7a livestock rural/livhds	8a coastal fisheries	9a globalization	10a inst. res. NARS
	1b HV GR	2b drought	3b multiple use	4b forests margins	5b land manage	6b post harvest	7b livestock growth	8b inland fisheries	9b rural dev. strategies	10b producer orgs.
	1c orphan GR	2c biofort.	3c water harvest			6c markets trade	7c coping w/ls growth	8c sust.aquaculture	9c nutrit. and safety pol.	10c inst. res. PPP
	1d livestock GR	2d resist. diseases	3d water re-use			6d livestock prod. trade			9d env. services	
	1e fish GR	2e climate traits	3e water policy			6e new agric. policies			9e property rights NRM	
		2f labour/flex. traits							9f reduce risk	
		2g S&T policy								

Major focus for climate
Medium priority for clim
Broad but lower priority

Current research priorities	New(draft) strategic objectives
Producing more and better food at lower costs through genetic improvements;	Increased food productivity
Producing more and better food at lower costs through genetic improvements;	Safe nutritious food
Promoting sustainable management of water, land, and forest resources	Sustainable ecosystems and
Sustaining biodiversity for current and future generations;	Biodiversity conservation
diversification and emerging opportunities for high- value commodities and products; *	Climate change mitigation and adaptation ✓
Improving policies and facilitating institutional innovation ----	Policy and institutional innovation

The initial concept of CGIAR Challenge Program was to:

- Bring together the right partners to address a major global challenge
- Focus on the "added value" from the partnership
- Focus on outcomes in a fixed time frame

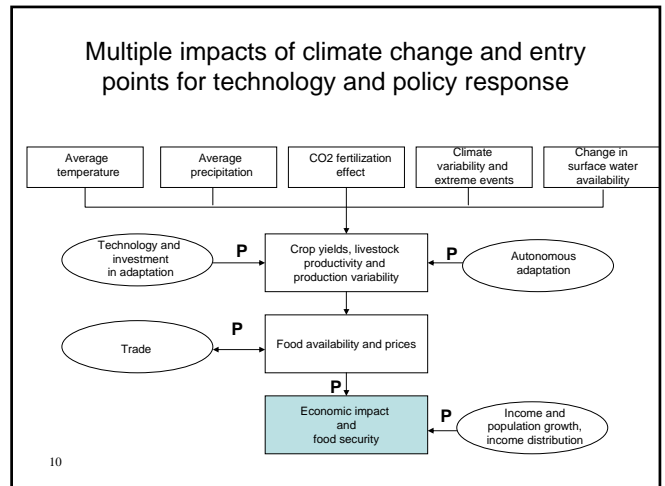
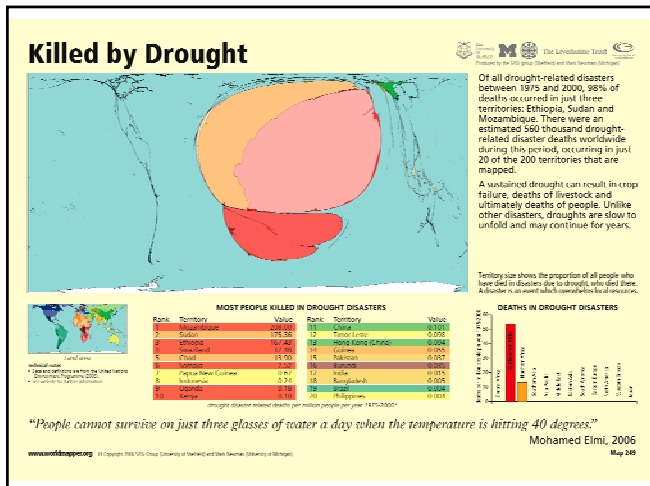
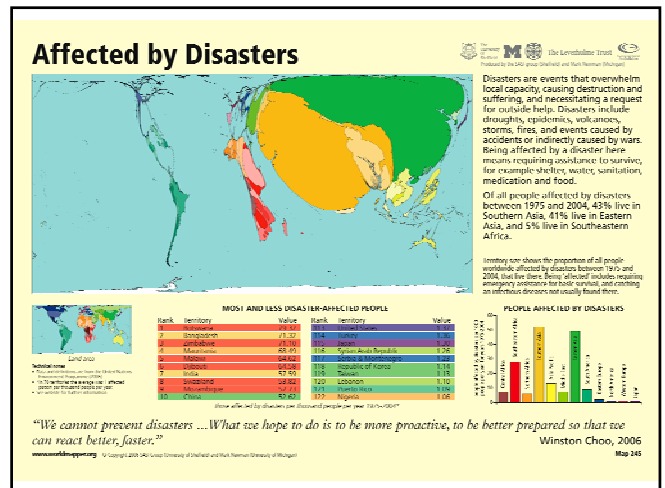
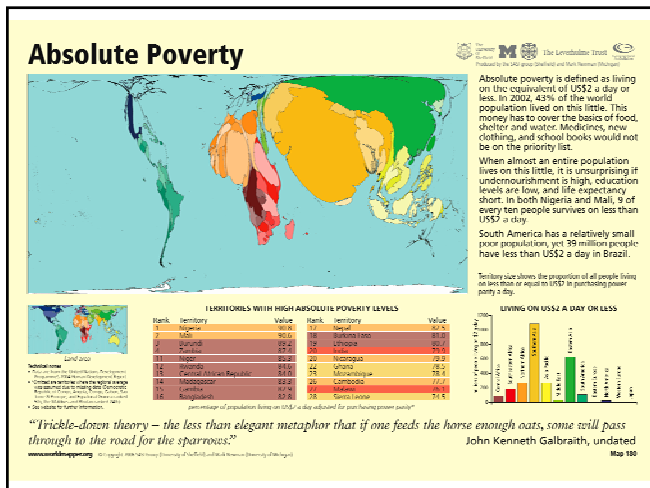
The soon to be formed CP Climate Change, Agriculture and Food security does just that

CP Chair (recently appointed)
Thomas Rosswall
Exec director of International council for science (ICSU)
Previous Exec Director IGBP

Climate Change and Agriculture: the key message from the WDRReport

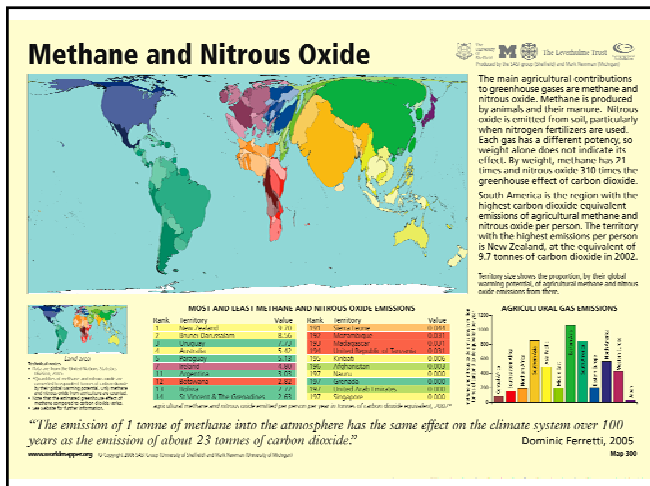
- Impact and adaptation
 - Potentially devastating impact on agriculture in tropical regions
 - Disproportionate impact on the poor
 - Adaptation will reduce but not eliminate costs
- Contribution and mitigation
 - Second-largest source of Greenhouse Gas (GHG) emissions (26-35% of total GHGs)
 - Very large untapped potential for cost-effective GHG mitigation, particularly through avoided deforestation
 - Need to ensure that smallholders benefit from carbon financing schemes

Source: WDR 2008



- ### Adaptation can reduce costs
- Deepening of what we should be doing to develop resilient crops and animals:
 - Drought
 - Water – too much too little
 - High temperature
 - IPM – disease, insect and WEEDS
 - Increase phenological variability
 - Increase flexibility in planting systems, diversity in growth stages to avoid critical stress periods
 - Improved resource management methods
 - Technology development procedures to increase sampling of the target environments
 - Provide choices of crops

- ### Adaptation – it takes time and continuity
- Drought tolerant maize
 - Basic work began in 1978 for routine screening procedures
 - 10 years of development of drought tolerance germplasm under controlled drought conditions
 - 10 years of evaluation and selection in the target environments by farmers
 - Conservation Tillage in Rice Wheat System
 - Basic work began in the 1970's by CIMMYT and NARES partners in the RWC
 - Adoption of tillage equipment by public and private engineers
 - Wide scale participatory evaluation in RWC
 - Uptake by the private sector begins by 2000
 - Conservation tillage in Africa
 - Basic work in the 1970's by R. Lal at IITA
 - ?



- ### ... Large untapped potential for mitigation?
- Reduction of GHG emissions from agriculture
 - eg Livestock sector options may help resolve part of the problem
 - Need different policies and technologies for different sources of emissions
 - Reduce enteric fermentation by changing feed quality
 - Reduce volatilization of methane from livestock (and rice paddy)
 - Improved land and livestock management practices for N, C etc
 - Biological carbon sequestering
 - soils
 - trees
 - But the greatest potential lies in reducing deforestation and land degradation
 - Harness carbon financing for avoided deforestation
 - There are some win-win mitigation/adaptation options

Could PES help the poor?

Yes potentially; a lot of money available

But,

At present almost no successful PES in developing countries- in spite of lots of claims and trials

Market systems inaccessible to the poor

Advocates try to load schemes with “bundled” benefits

However,

Progress is being made on land titling, devolution etc

Local institutions are getting stronger

Needs,

Measurement of C at smallholder scales, mosaics, etc

Measurement of C in managed systems

Payment in common property situations

Ecoregions etc as context



Alliance of the CGIAR Centers

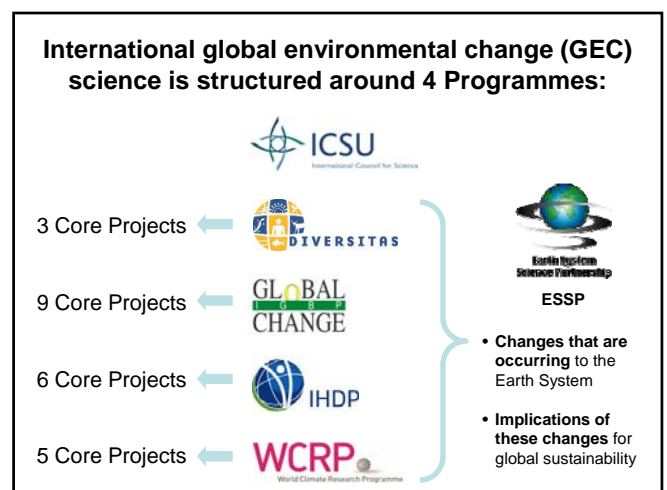
Earth System Science Partnership

Proposal for a CGIAR Challenge Program on Climate Change, Agriculture and Food Security

A collaboration between

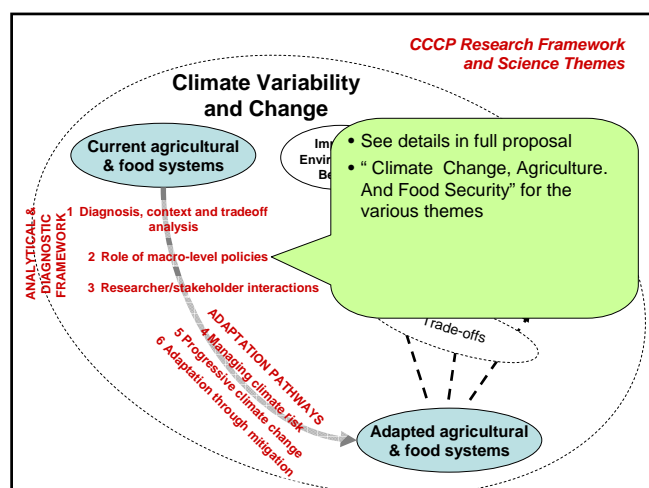
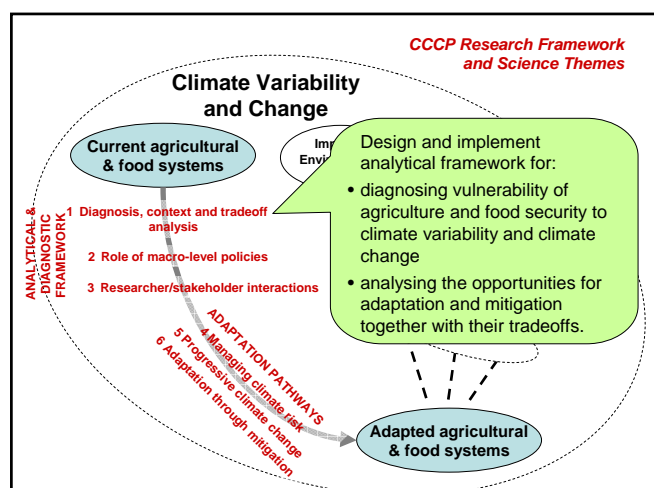
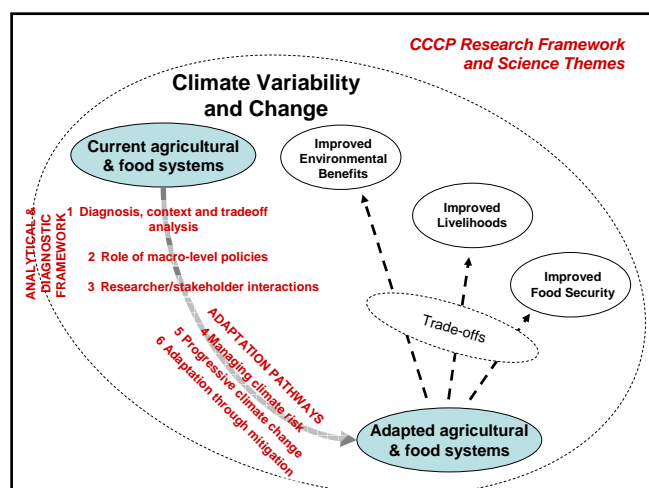
- the CGIAR Alliance
- the NARES
- the Earth System Science Partnership

Prepared in collaboration with: ACMAD, Agrhyment, ASARECA, CORAF/WECAARD, FARA, ICPAC and RWC and in consultation with FAO and WFP



CCCP Objectives

1. Overcome critical gaps in knowledge of how to enhance – and manage the tradeoffs between – food security, livelihood and environmental goals in the face of a changing climate. [= > *outputs*]
2. Develop and evaluate options for adapting to a changing climate to inform agricultural development, food security policy and donor investment strategies. [= > *outcomes*]
3. Assist farmers, policymakers, researchers and donors to continually monitor, assess and adjust their actions in response to a changing climate. [= > *impacts*]



Criteria for selecting the initial focus regions

1. Poverty and vulnerability: high degree of vulnerability to climate, large poor and vulnerable populations, drivers of vulnerability that extend beyond the focus region.
2. Complementary set of social, cultural and institutional contexts.
3. Complementary climatic contexts, with different temporal and spatial scales of climate variability and degrees of predictability.
4. Significant but contrasting climate-related problems and opportunities for intervention.
5. Security, governance and institutional capacity that favour likelihood of generating transferable results.

3 initial focus regions

Build on and contribute to ongoing GEC and Alliance work

- | | | |
|------------------------|---|---|
| 1. East Africa | } | <ul style="list-style-type: none"> • AMMA • CGIAR Alliance Collective Actions • AfricaNESS |
| 2. West Africa | | |
| 3. Indo-Gangetic Plain | } | <ul style="list-style-type: none"> • GECAFS/APN • CGIAR RWC • MAIRS (esp. glaciers, water resources, RMIP) |
| | | |

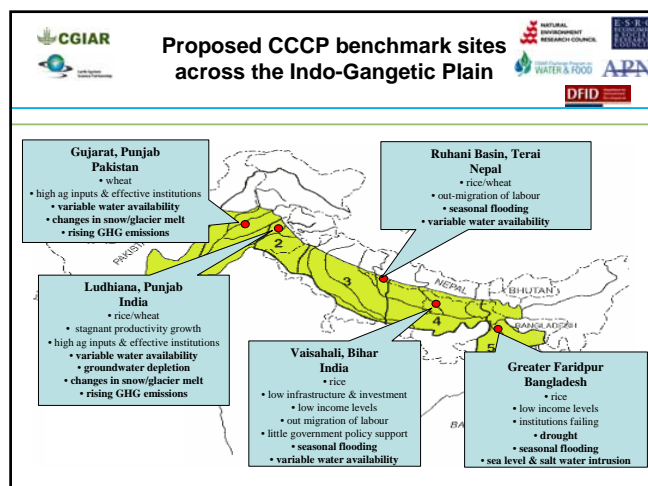
Within-region research sites

Will lie along gradients of:

- anticipated temperature and precipitation change
- current and anticipated land use pressure
- represent different institutional (e.g. land tenure) arrangements.

Sites in E and W Africa to be determined

Sites in IGP will be ongoing GECAFS case study districts



FOCUS CP activities and outputs on outcomes for impact:

1. Mainstream climate variability and change issues into national development strategies
2. Innovative information products and communication processes developed and maintained local, national and regional
3. Effective climate informed decisions for priority setting for options
4. Establishing the appropriate innovation systems so that adoption options are effective

CCCP governance and management are designed to address four distinct tasks

CCCP Steering Cmmtt
Independent Chair
6 Independent members
Alliance rep (*ex officio*)
ESSP SC rep (*ex officio*)

- Oversee, and make decisions on science direction and resource allocation
- Provide benchmarks to Management to Implement the agreed plans
- Obtain advice on science direction from stakeholders and maintain their buy-in
- Maintain links to CGIAR and ESSP agendas by updates from the Chair and/or Director

Tentative time frame: [16 June 2008, Rome]

CCCP Chair: Thomas Rosswall recently appointed.

CCCP Steering Committee: Nominations; six appointed by 31 October 08 [*Chairs of CCCP, ESSP-SC & Alliance*]

CCCP Director: International Call; Full-time post appointed by 31 December 08, to be in post by 1 April 2009 [*CCCP Steering Committee*]

CCCP Theme Leaders: International Call; Full-time equiv post appointed by 1 April 09 [*CCCP Steering Committee + CCCP Director*]

CCCP Regional Facilitators: Process and timing to be established. Part-time post [*CCCP Steering Committee + CCCP Director*]

Summary: Climate Change Challenge Program

Budget: 100M\$ for the first 5 yrs

Opportunities:

- The CP business niche is the "Added value" from partners
- Not business as usual for each partner- focus on the interphase
- Efficiencies in financing – from both science and development agencies

Critical issues:

- **Stay focused on the added value**
- **Define plausible outcomes it can deliver in time frame**
- Maintain visibility and active engagement among the Agriculture and GEC research communities

