

A practical understanding of how carbon markets & carbon finance might play a role in the sustainable management of upland watershed areas.



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CARBONLAB
THE UNIVERSITY OF QUEENSLAND

A carbon and energy
management initiative,
delivering innovation in
research and teaching to
industry & government.

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MOUNTAINS IN AUSTRALIA



Dr Paul Dargusch

- 20 yrs in industry in environmental markets
- Commodities trader; Aus/Pacific, Japan, EU, China
- Studied PhD part-time (Ecological Economics, UQ)
- Undergraduate qualifications BSc Hons (Forestry)
- Deputy Coordinator IUFRO 5.10.00
- MACC projects: Cement Aus, Port of Brisbane
- CDM projects: Xstrata (Philippines), RCC (Indonesia)
- CDM/Capacity Building (Pacific Islands Region, Libya)
- Carbon management strategies: Cape Alumina
- Director of Education – International Energy Centre

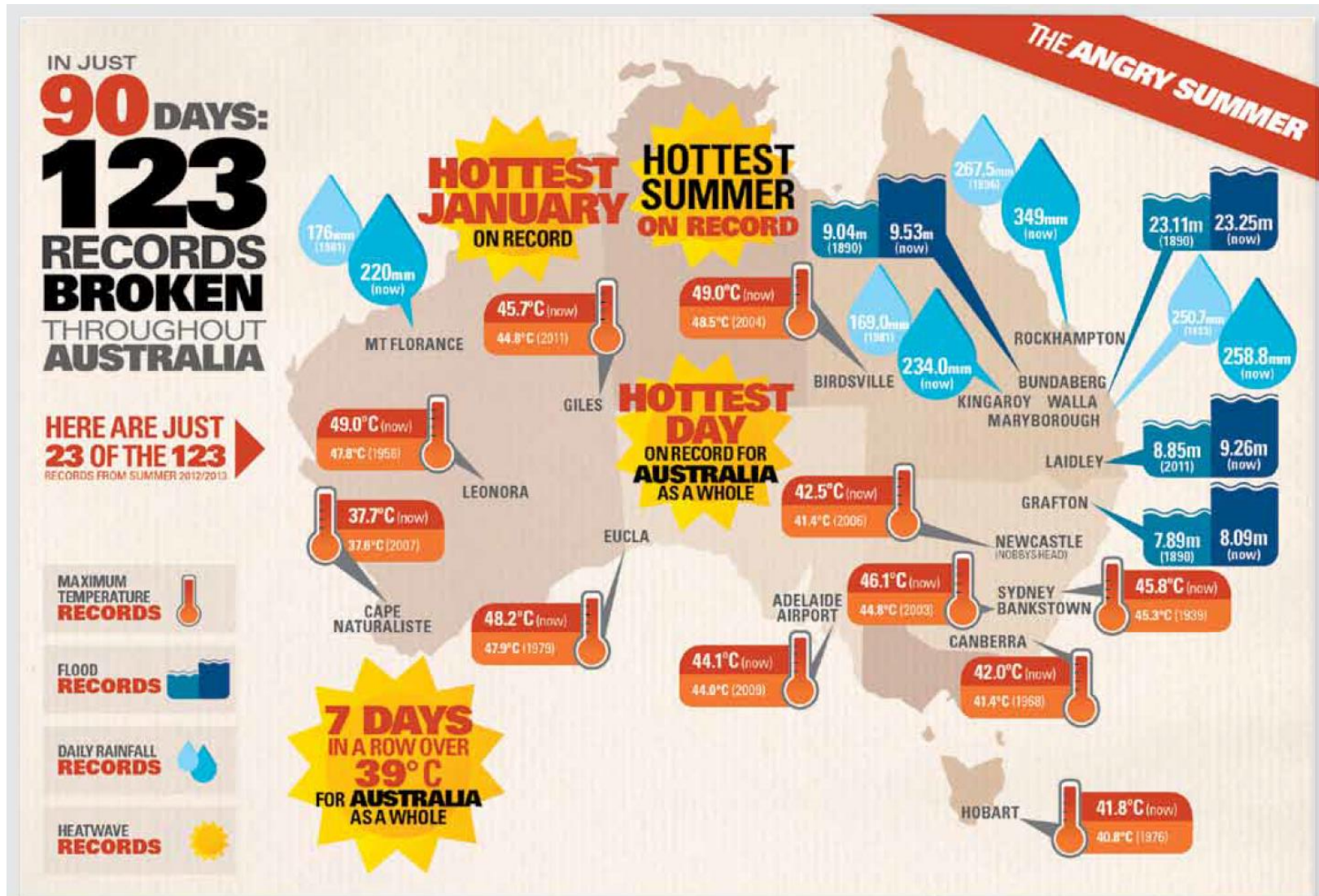
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ADRIAN WARD

- 10+ yrs in business & policy, 6 years in carbon & energy management / strategy
- Bachelor or Business (Sustainability)
- Postgraduate in Energy Economics and Renewables
- Australian Government Registered Greenhouse & Energy Auditor
- Worked as Senior Consultant for major environmental services group in Australia
- Worked as Associate Director for Queensland Government in renewable energy policy
- Involved in a number of start-ups: carbon trading, biogas, geothermal hot rock and solar
- Worked with big polluters (Caltex) to more sustainability inclined firms (Billabong)
- Worked on Carbon Farming Initiative projects / methodologies
- Carbon market related projects with UN, World Bank, Aus, PEMSEA and NZ Government
- *Currently, education Manager International Energy Centre (Professional Development)*
- *Also, director at CarbonLab (Projects, Research & Lecturing)*

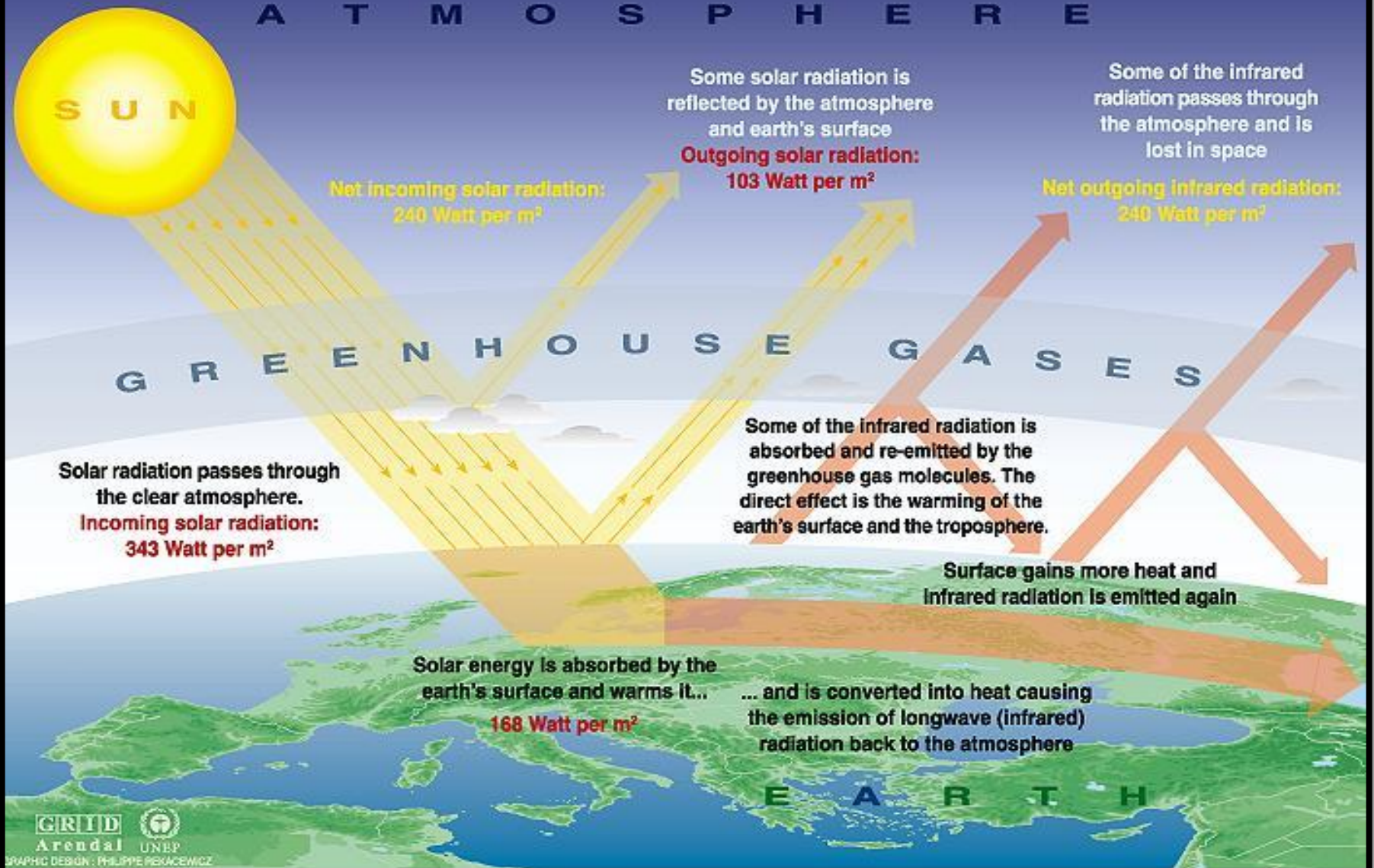
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Climate change is a BIG issue...



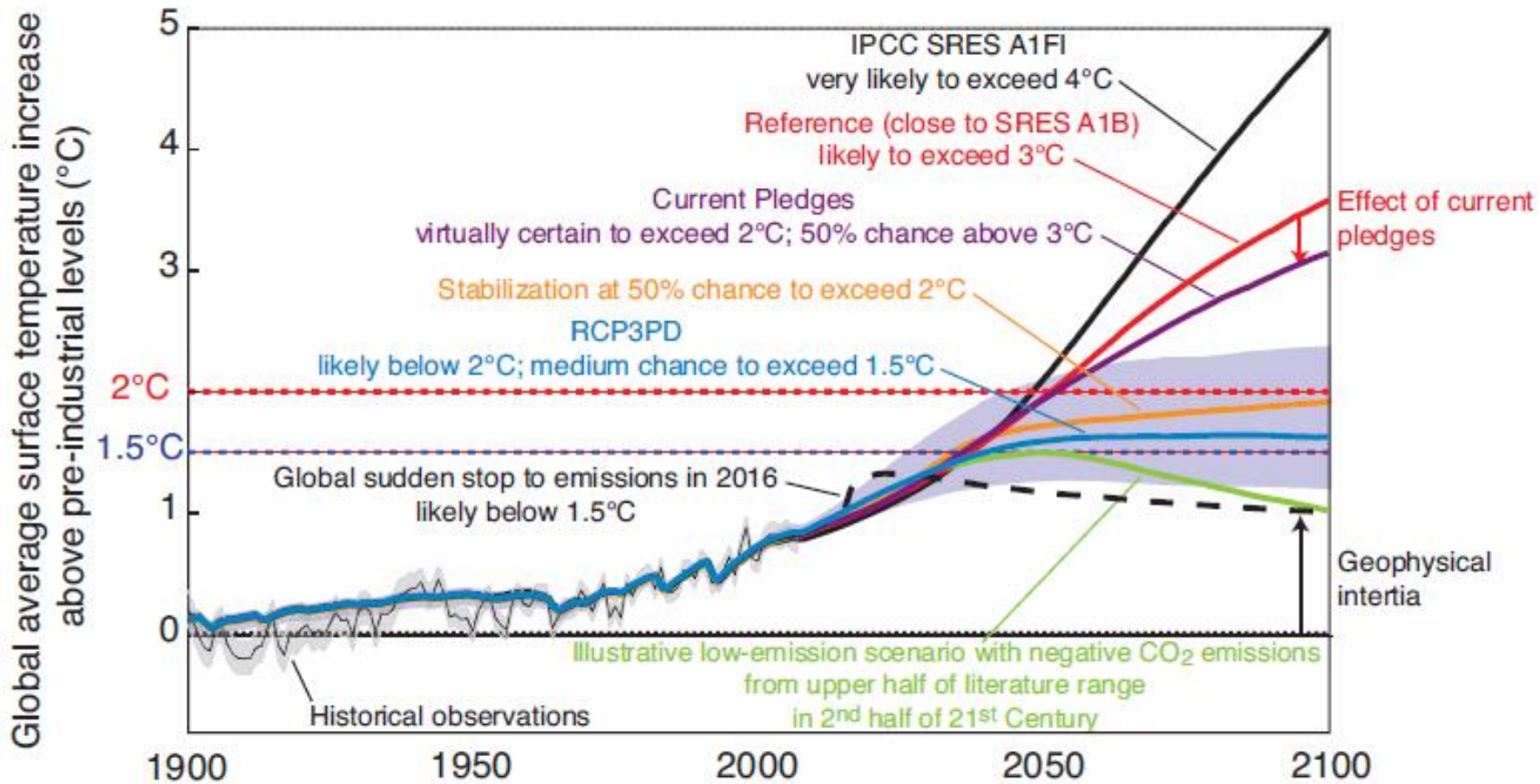
Data sources: BoM, 2013a,b

The Greenhouse effect

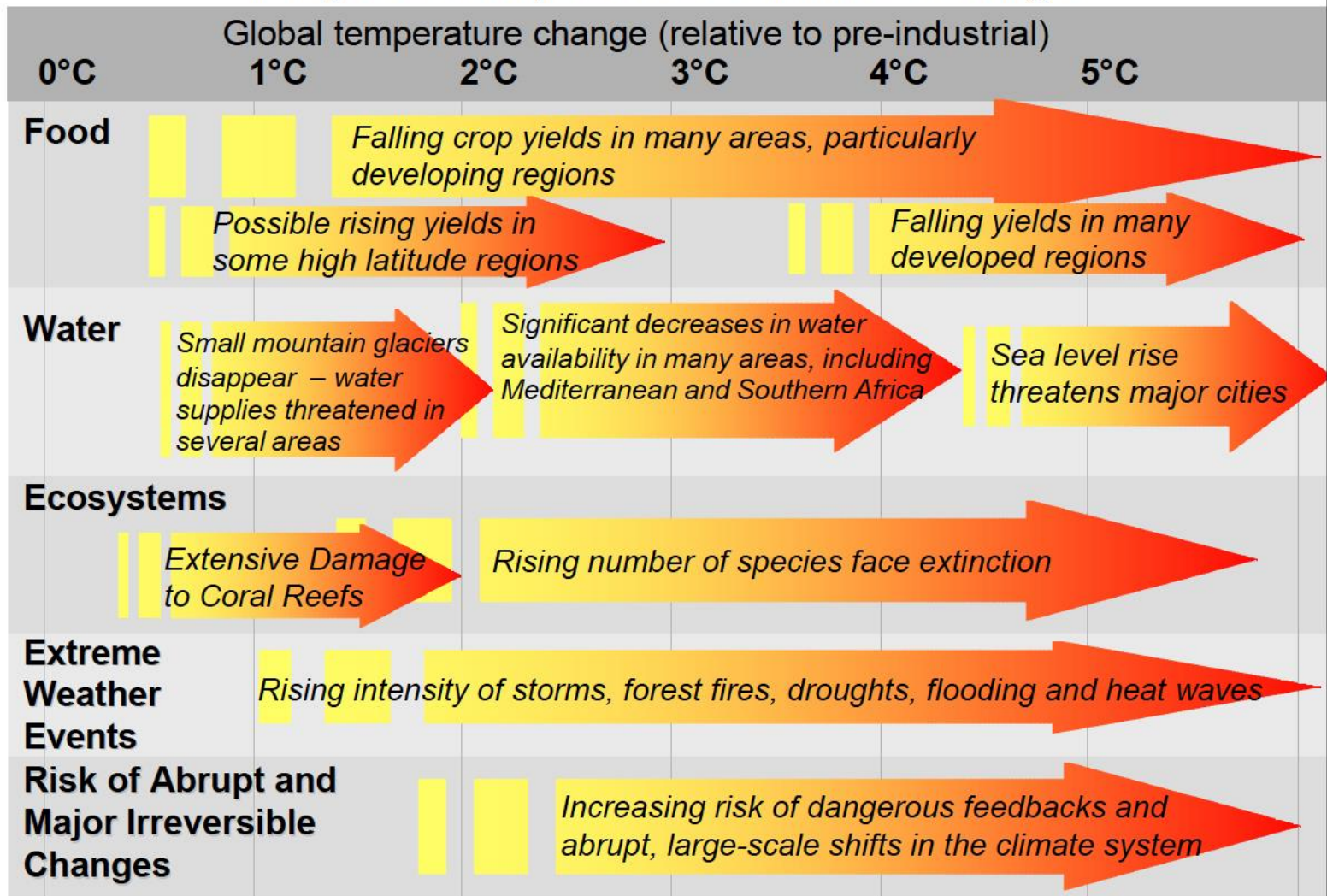


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GRAPHIC DESIGN: PHILIPPE REKACIEWICZ

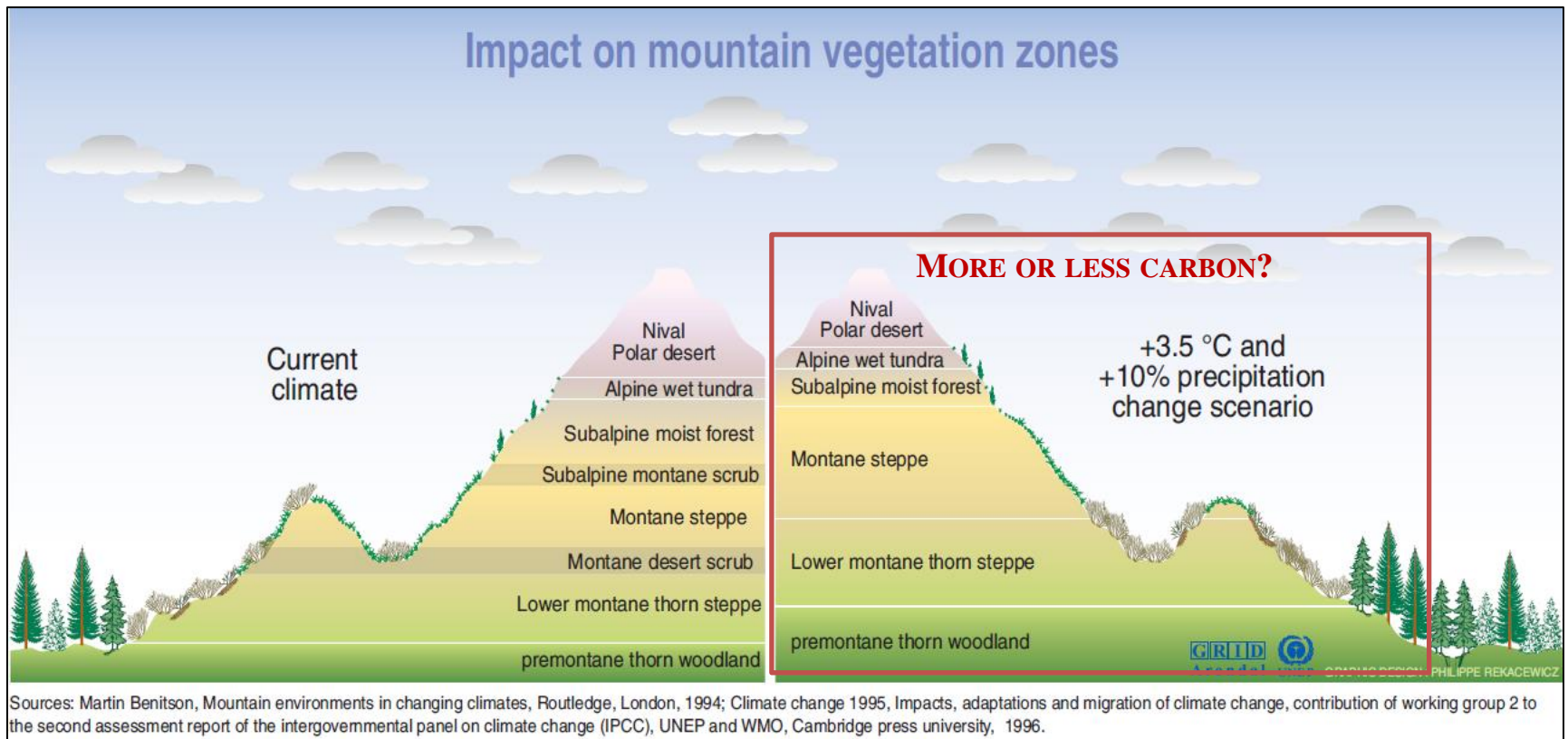
Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.



Projected Impacts of Climate Change



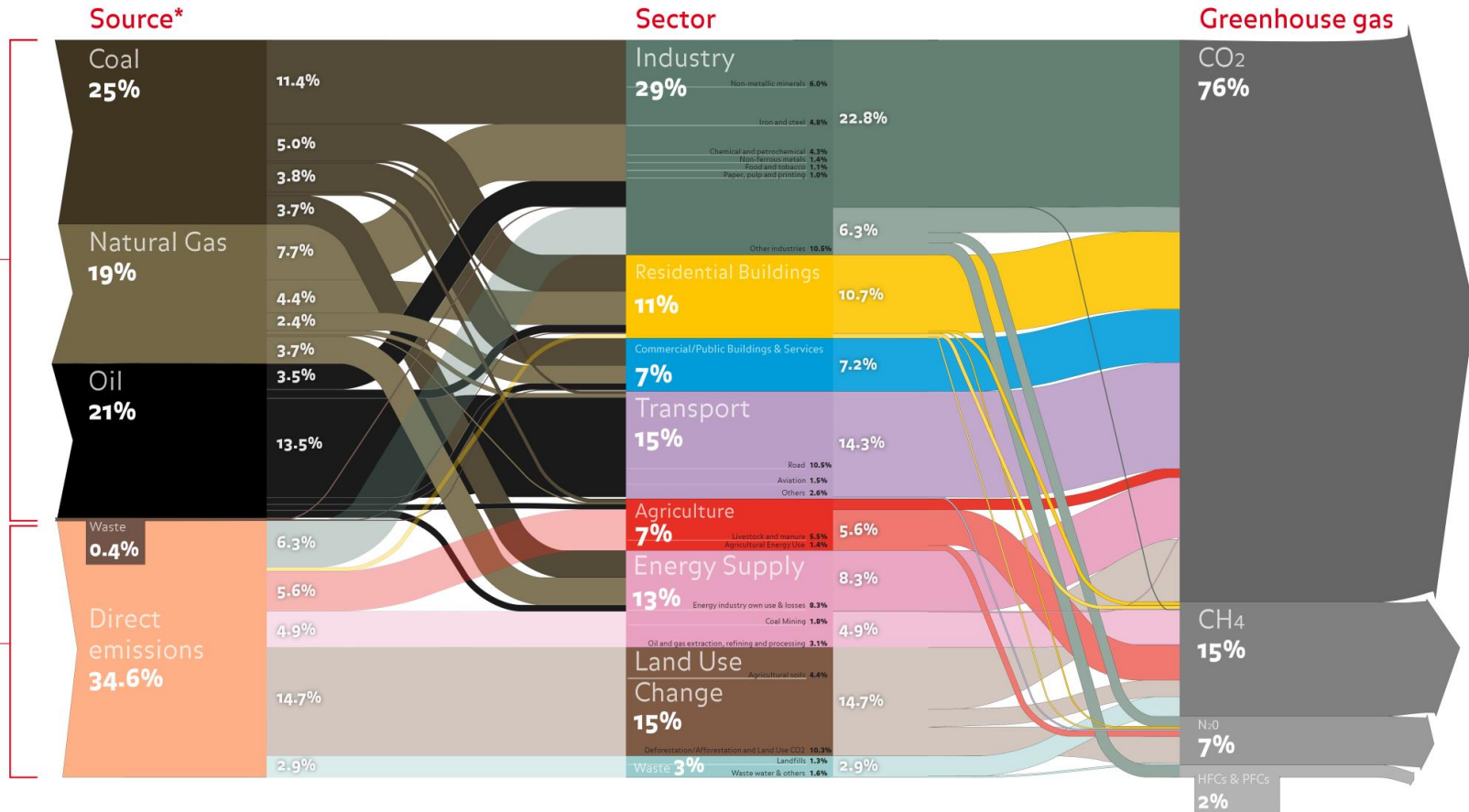
For mountains, climate change will have a severe and disproportionate impact on snow-cover, vegetation, slope stability and hydrological function.
The systems dynamics are highly complex.



World GHG Emissions Flow Chart 2010

Total emission worldwide (2010)

48 629
MtCO₂ EQ



* Greenhouse gases can arise from two sources

DIRECT EMISSIONS (EXAMPLES)

Sector: Agricultural
Cows and other livestock emit tons of methane (CH₄) by passing gas each day.



Sector: Land Use Change
Cutting down trees for logging or agriculture releases CO₂ stored in the biomass.



Sector: Waste
Organic matter in landfills emits tons of methane each year.



Tonnes of Carbon Dioxide Equivalent (tCO₂e)

GHG	GWP
Carbon Dioxide (CO ₂)	1
Methane (CH ₄)	Currently 21 (25 from 2018)
Nitrous Oxide (N ₂ O)	310
HFCs	140-11,700
PFCs	6,500-9,200
Sulphur hexafluoride (SF ₆)	23,900
Nitrogen trifluoride (NF ₃)	17,200 (Kyoto 2 and beyond)

Managing Externalities

- Mitigating (reducing the impacts of) climate change requires humans to reduce greenhouse gas emissions, and if this fails, to be ready to 'adapt'.
- Greenhouse gas emissions cause 'externalities'. Externalities are common in virtually every area of economic activity.
- They are defined as third party (**or spill-over**) effects arising from the production and or consumption of goods and services for which no appropriate compensation is paid.

5 Different policy approaches...

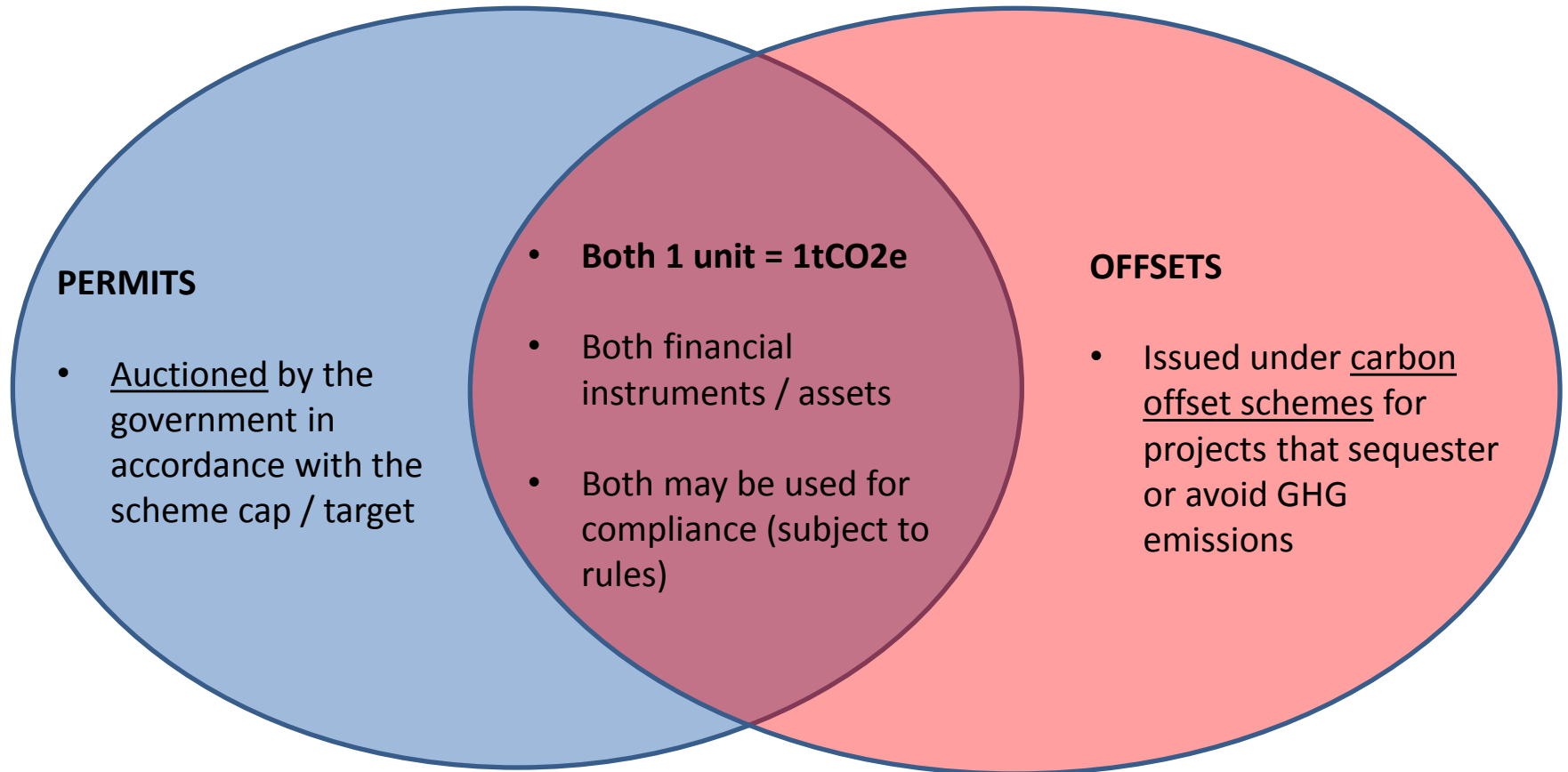
1. Command-and-control
2. Establish a price signal (tax or market)
3. Direct Action
4. Do nothing
5. Hope for a '*Silver Bullet*'

A carbon tax is simple to administer – for every tCO₂e emitted, a company will pay a fixed amount of money to the government e.g. \$23 tCO₂e

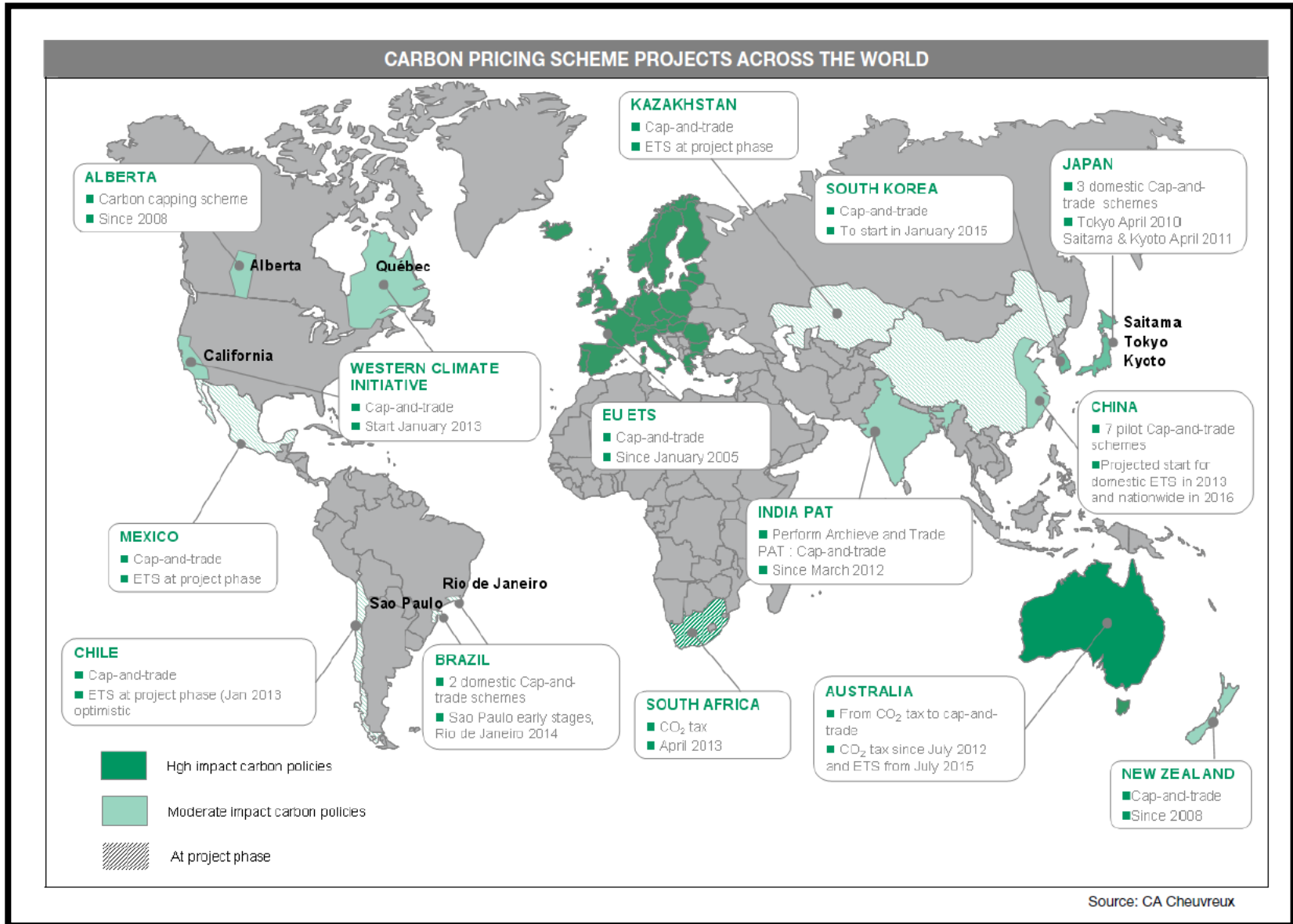
Countries who have an emissions trading scheme (ETS) require highly polluting companies to buy 1 carbon permit or offset for every tCO₂e emitted.

If companies do not get enough permits (or offsets) then they must buy from other companies who have lowered their emissions and do not require them (or pay a penalty price). The price varies according to supply & demand for permits (emissions levels).

Emissions trading schemes (ETSs) are based on the trading of carbon permits and offsets.



Over 90 countries with a tax or market mechanism



Including China....

The world's 2nd biggest emitter

Approved Carbon Trading Pilot Schemes in China

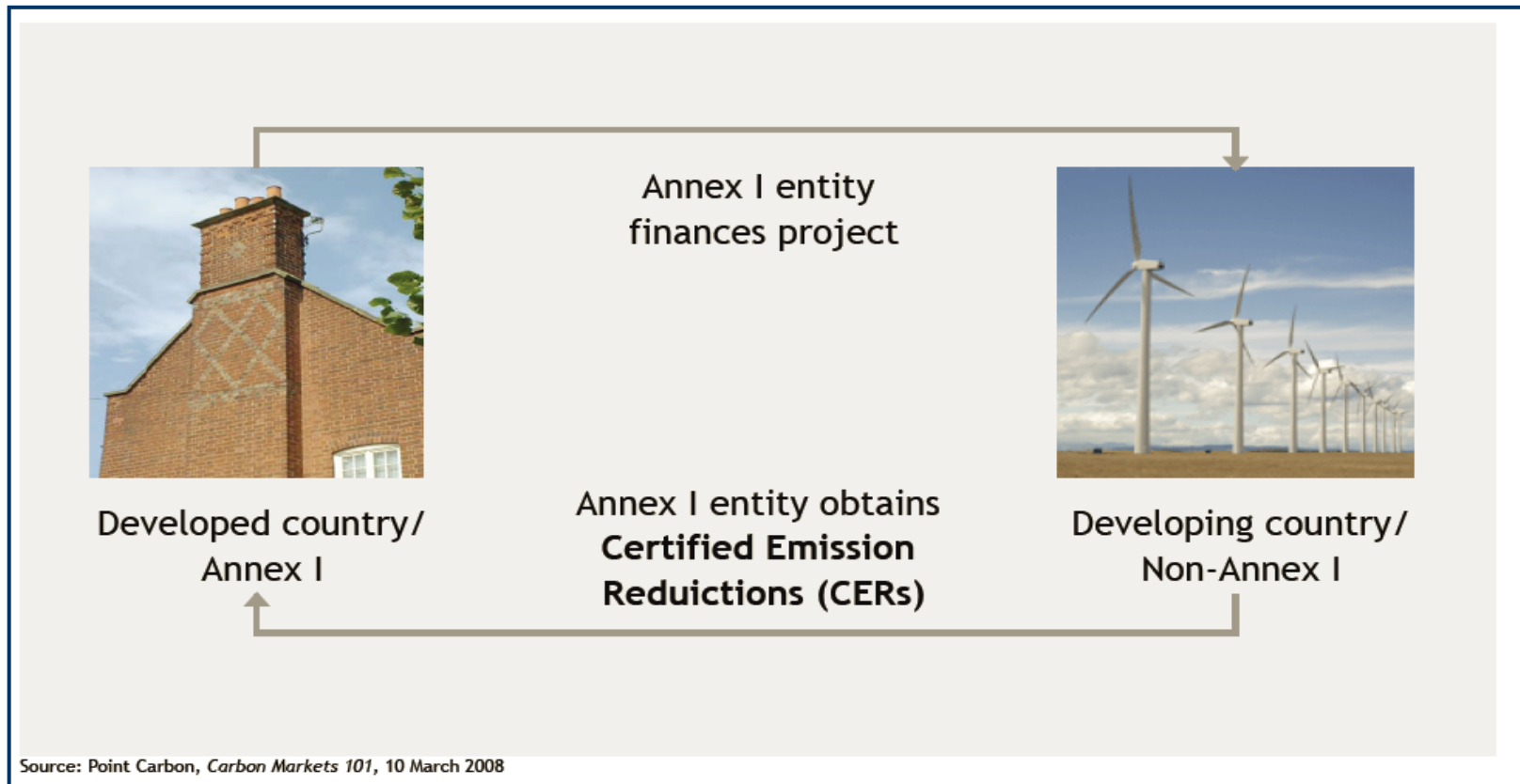


Table 1: Broad details of six (of seven) Chinese pilot emission trading schemes (World Bank, 2013).

	Shenzhen	Beijing	Guangdong	Hubei	Shanghai	Tianjin
Mandatory or voluntary	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory
Type of emission limit	Absolute	Absolute	Absolute	Absolute	Absolute	Absolute
Total emissions in region (Million tonnes CO ₂ -e)	83.4	100	510	N/A	240	130
Estimated scheme caps (Million tonnes CO ₂ -e)	31.7	N/A	214	(~35% total emissions)	110	78
Sectors included	800 firms in 26 sectors covered including electricity and natural gas, water supply and industrial manufacturing	600 entities including electricity, manufacturing and major public buildings	827 companies including energy intensive industries and electricity	Electricity, iron and steel, chemical, cement, auto manufacturing, aluminium, other high emission industries	197 companies including energy intensive industries, (air) ports and commercial buildings	Electricity, iron and steel, chemical, petrochemical, oil and gas exploration and large buildings

Carbon offsets are an important tool to comply under emissions trading...

> Developed to Developing Nation <



Source: Point Carbon, *Carbon Markets 101*, 10 March 2008

Carbon offsets can be created by projects that avoid or sequester GHG emissions. The majority of these projects occur in developing countries.

These offset units are then used for compliance or voluntary purposes in industrialised countries.

Carbon offsets are verified and created under various schemes around the world.



United Nations
Framework Convention on
Climate Change



Types of carbon mitigation projects that can use carbon markets & carbon finance as funding mechanisms.



Renewable energy

Hydro



Energy efficiency



Industrial processes



Waste



Afforestation and reforestation

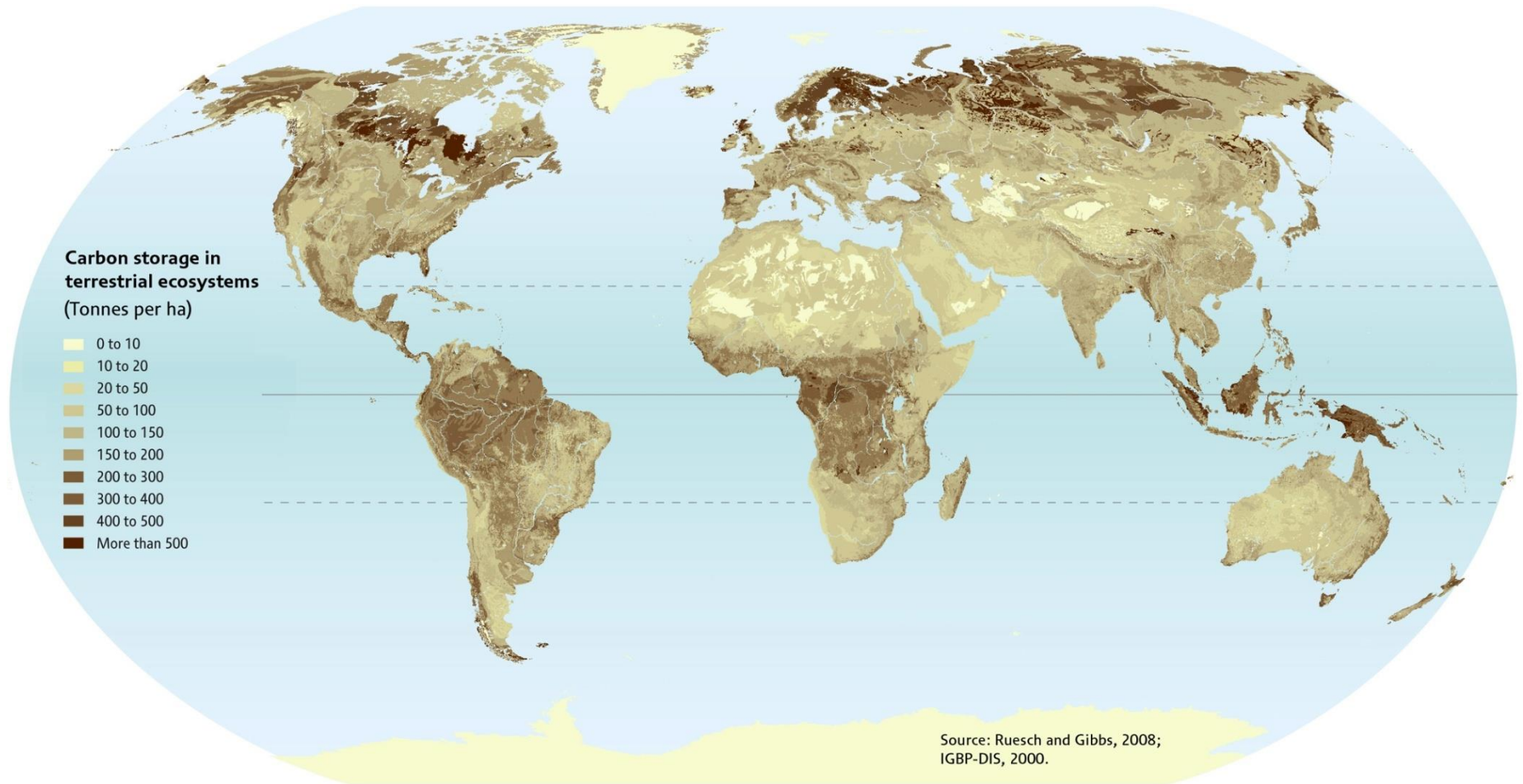


Other project Types:
Unilateral CDM
Programmatic CDM
Small Scale CDM

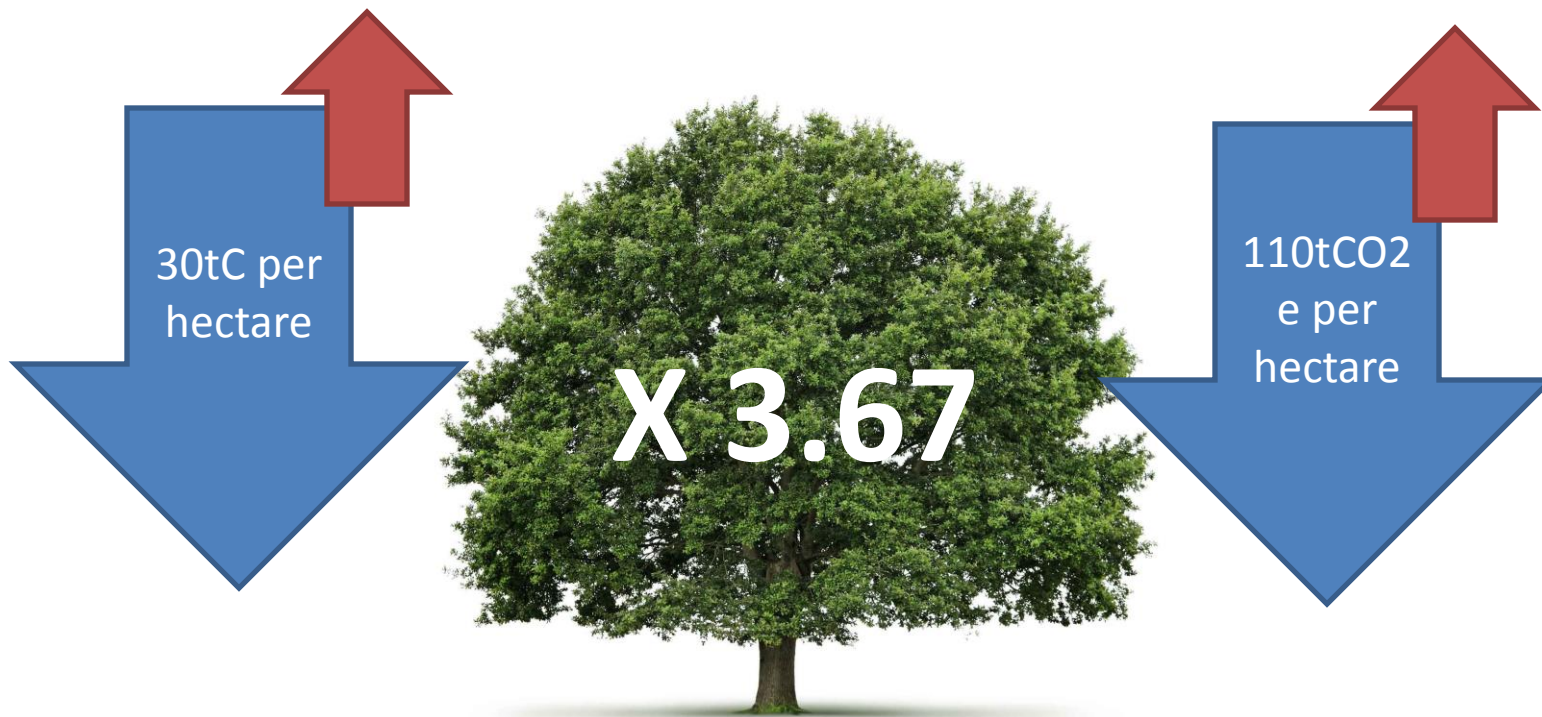


Source: Point Carbon, *Carbon Markets 101*, 10 March 2008

Sequestering or avoiding the release of carbon in a biological context can also generate carbon offsets.

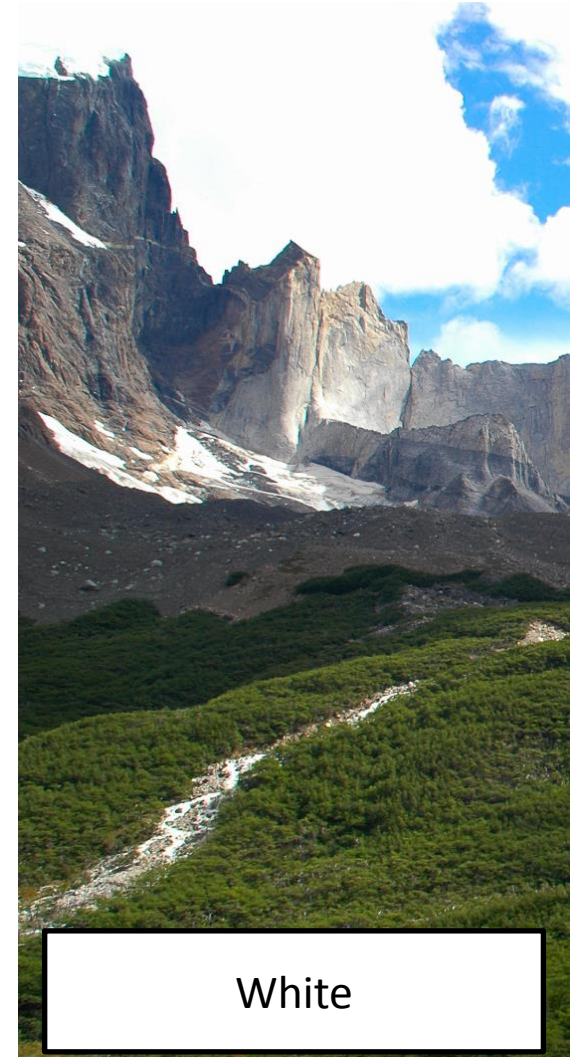
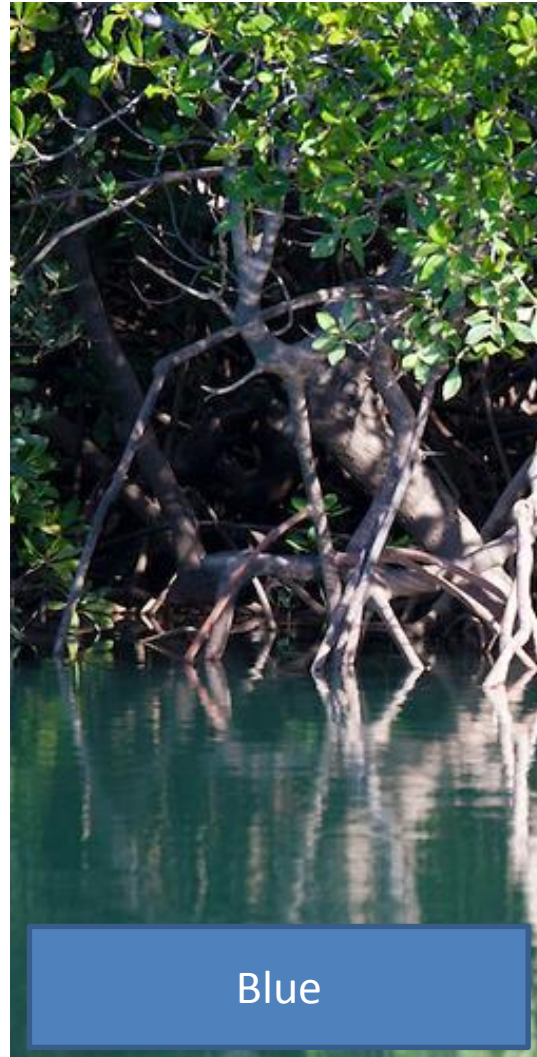


C VERSUS TCO₂E

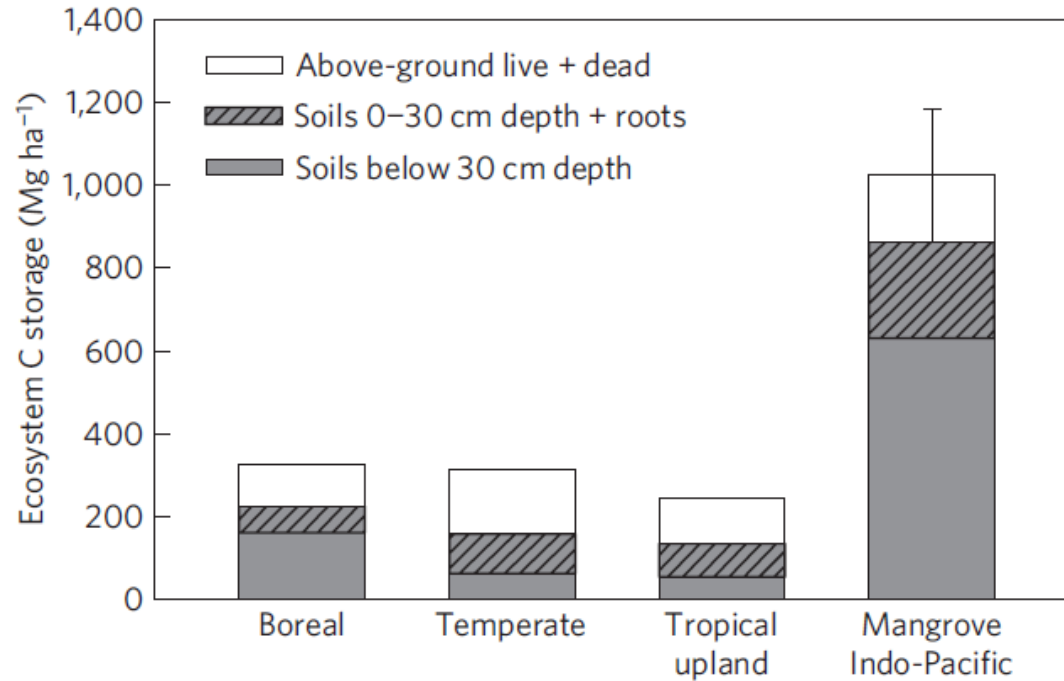


Market Value = 110t x USD\$4 = \$440/HA

From a climate policy perspective, biological stores of carbon can be categorised into colour types.



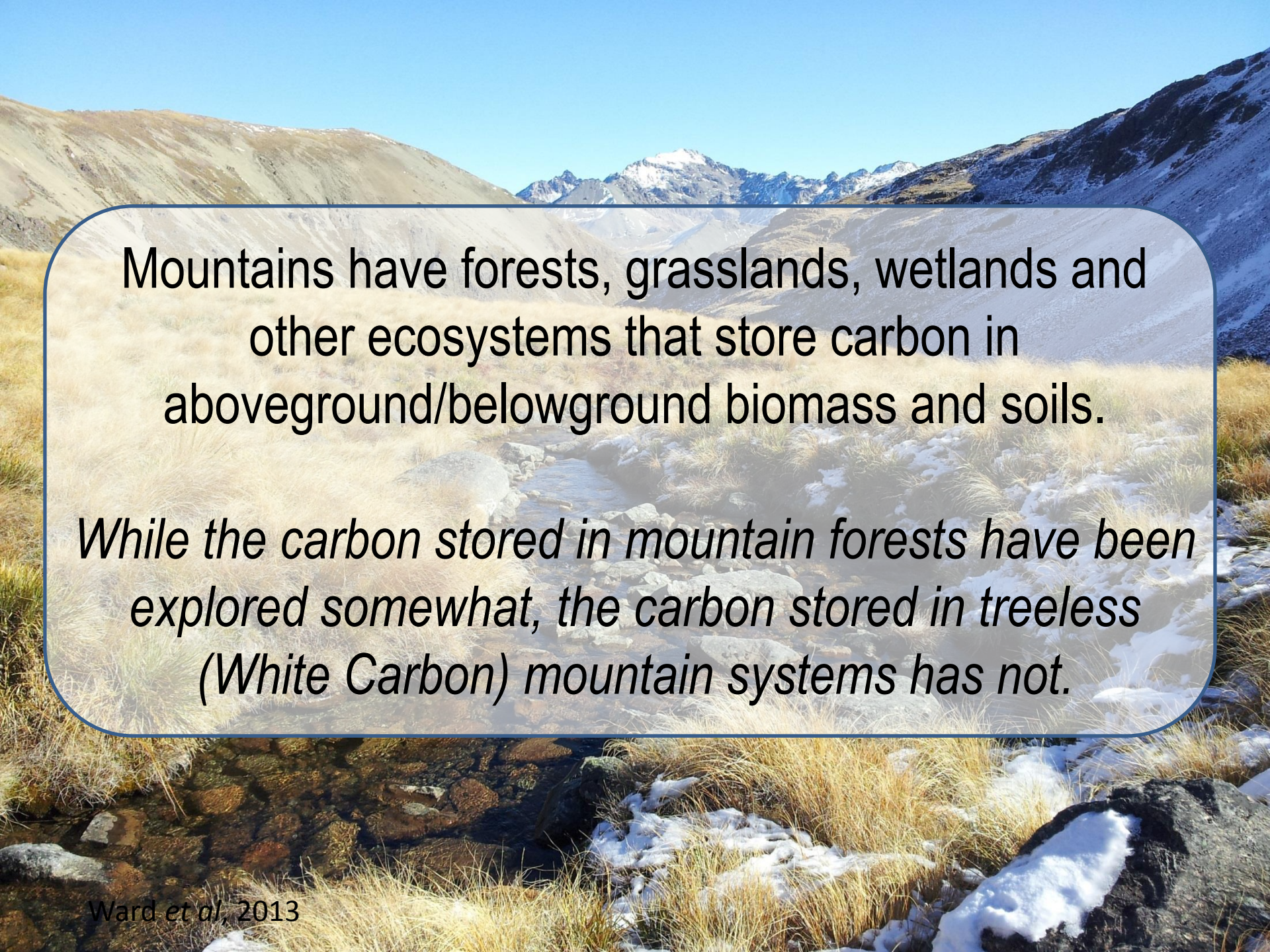
The Ocean & Coasts “Blue Carbon”



Donato *et al*, 2011

While we can revegetate/manage ecosystems to create carbon offsets, we can also avoid their destruction and thus save emissions through the REDD+ mechanism.

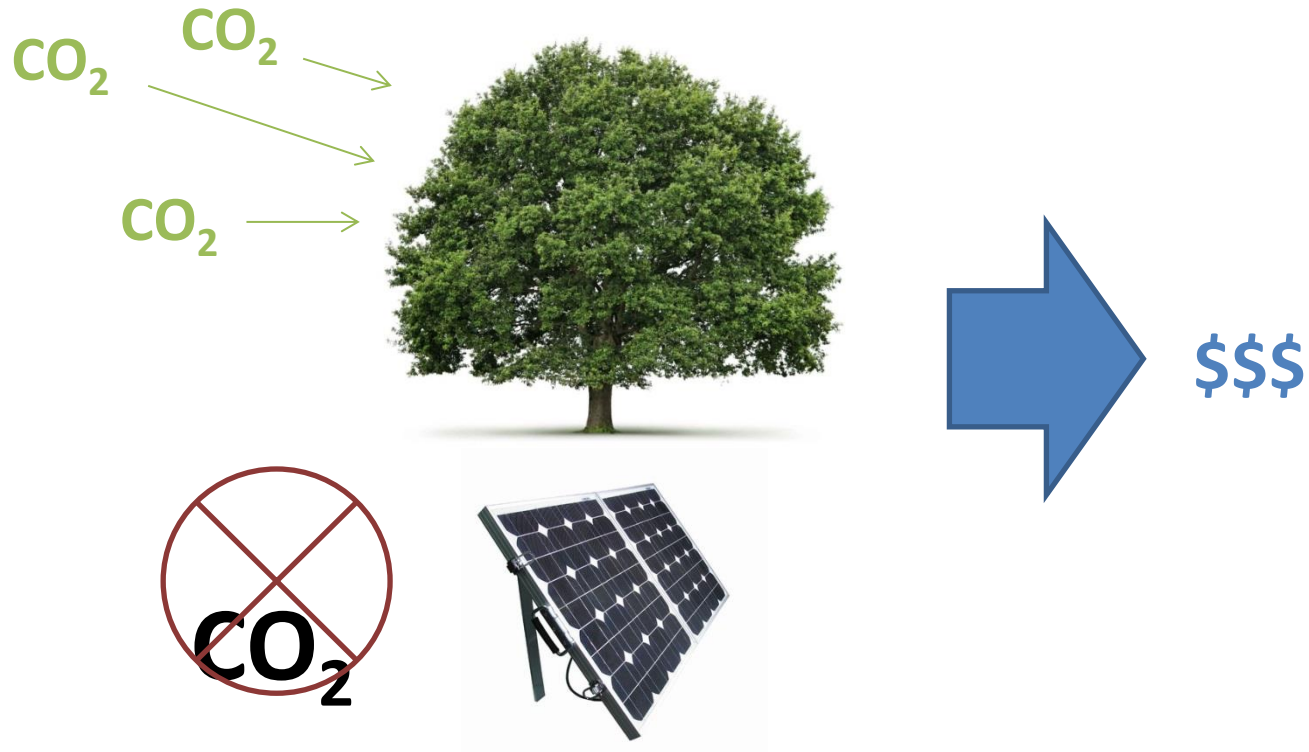
Video >

A scenic mountain landscape featuring a stream flowing through a valley. The foreground is filled with dry, golden-brown grasses and patches of snow. In the background, rugged mountains rise under a clear blue sky, with some peaks covered in snow. The overall scene is bright and clear, suggesting a high-altitude or alpine environment.

Mountains have forests, grasslands, wetlands and other ecosystems that store carbon in aboveground/belowground biomass and soils.

While the carbon stored in mountain forests have been explored somewhat, the carbon stored in treeless (White Carbon) mountain systems has not.

NEW SOURCES OF FUNDING REQUIRED...



At the end of 2012, Climate Finance resulted in \$300b of investment, though little for mountain areas

ADRIAN'S RESEARCH

RP: How might carbon finance be used to sustainably and effectively manage treeless high-mountain ecosystems and the ecosystem services they provide?

RQ₁: What is the spatial distribution and economic value of carbon stocks in treeless high-mountain ecosystems globally?

RQ₂: What are the options for using carbon finance to support the conservation of carbon stocks in treeless high-mountain ecosystems?

RQ₃: What climate policy interventions should enable the more effective use of carbon finance to support enhanced sustainability outcomes in treeless high-mountain ecosystems in the long-term?

White Carbon refers to carbon stored in treeless mountain ecosystems (e.g. grasslands & shrublands).

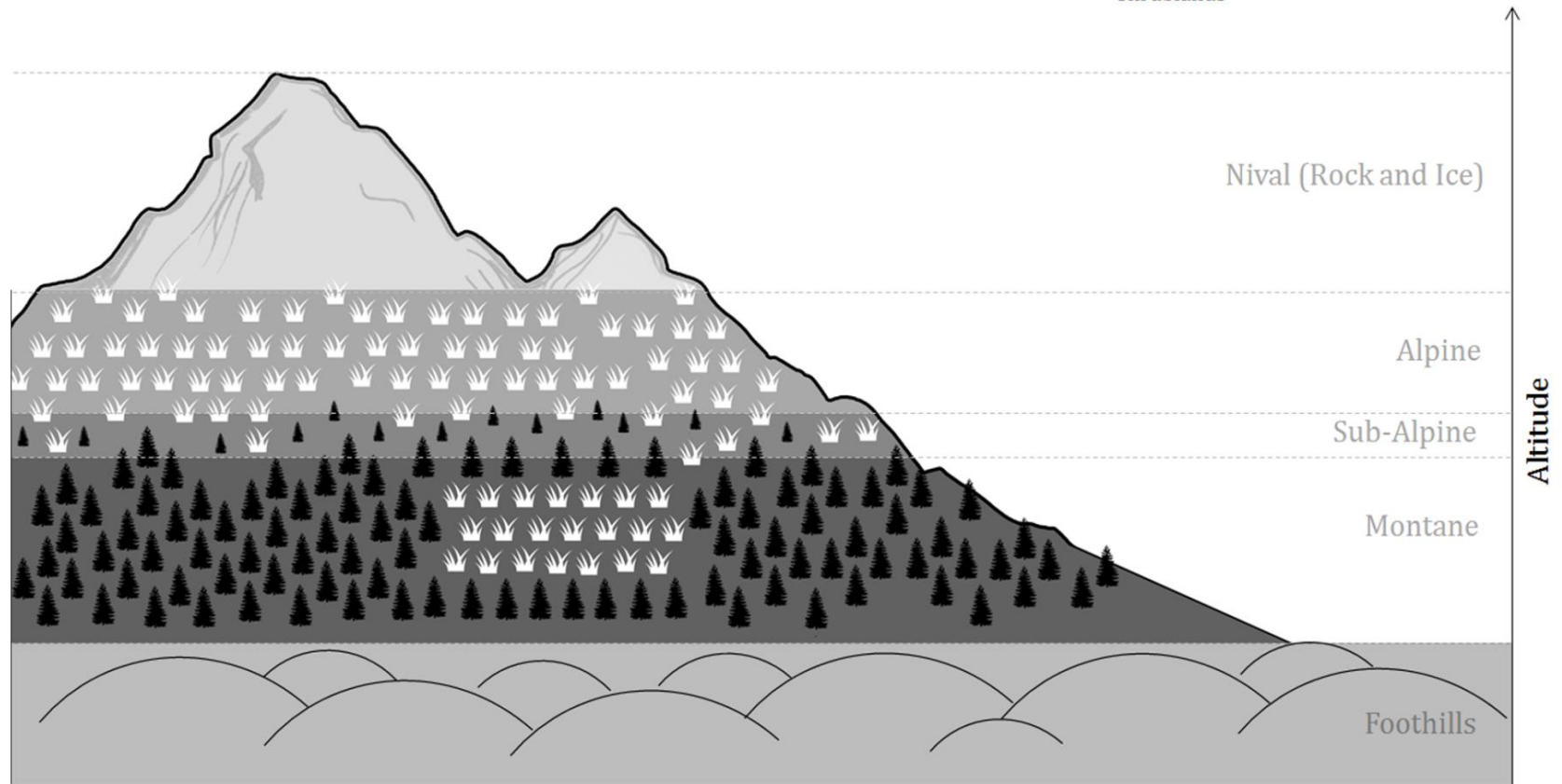
Legend:



White Carbon -
Grasslands and
Shrublands

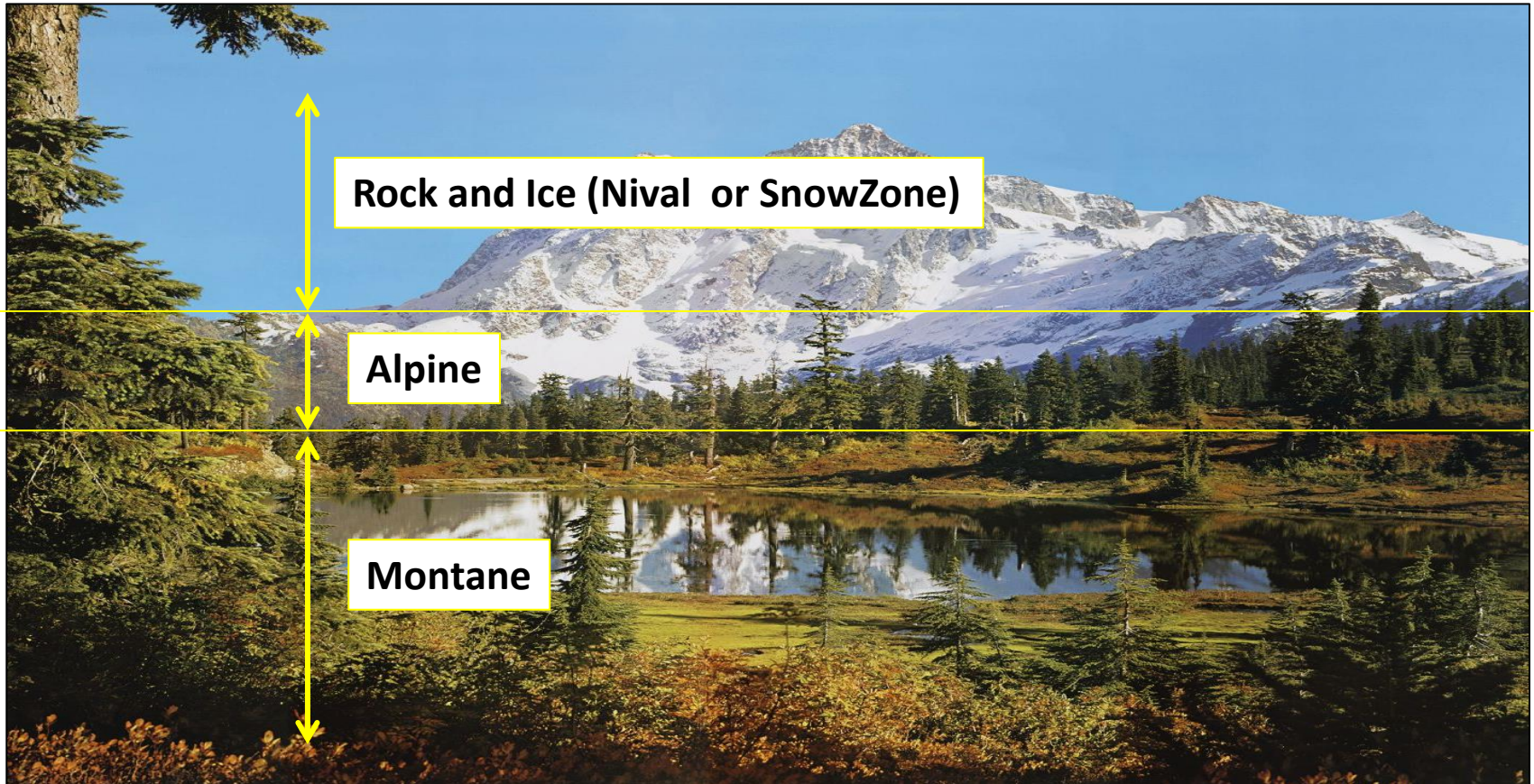


Forests and
Woodlands

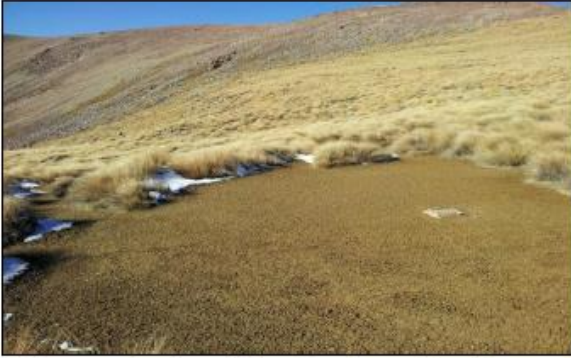


Ward *et al*, 2013 (confidential, under review)

Altitudinal Belts



White Carbon



Alpine grasslands and bog, Southern Alps, New Zealand Southern (Credit: Adrian Ward)



Montane heath, Brooks-British Range, USA (Credit: Erin McKittrick)



Alpine grasslands and herbfields, Australian Alps, Australia (Credit: Adrian Ward)



Northern Andean Paramo, Andes Mountains, Venezuela (Credit: Our Amazing Planet)



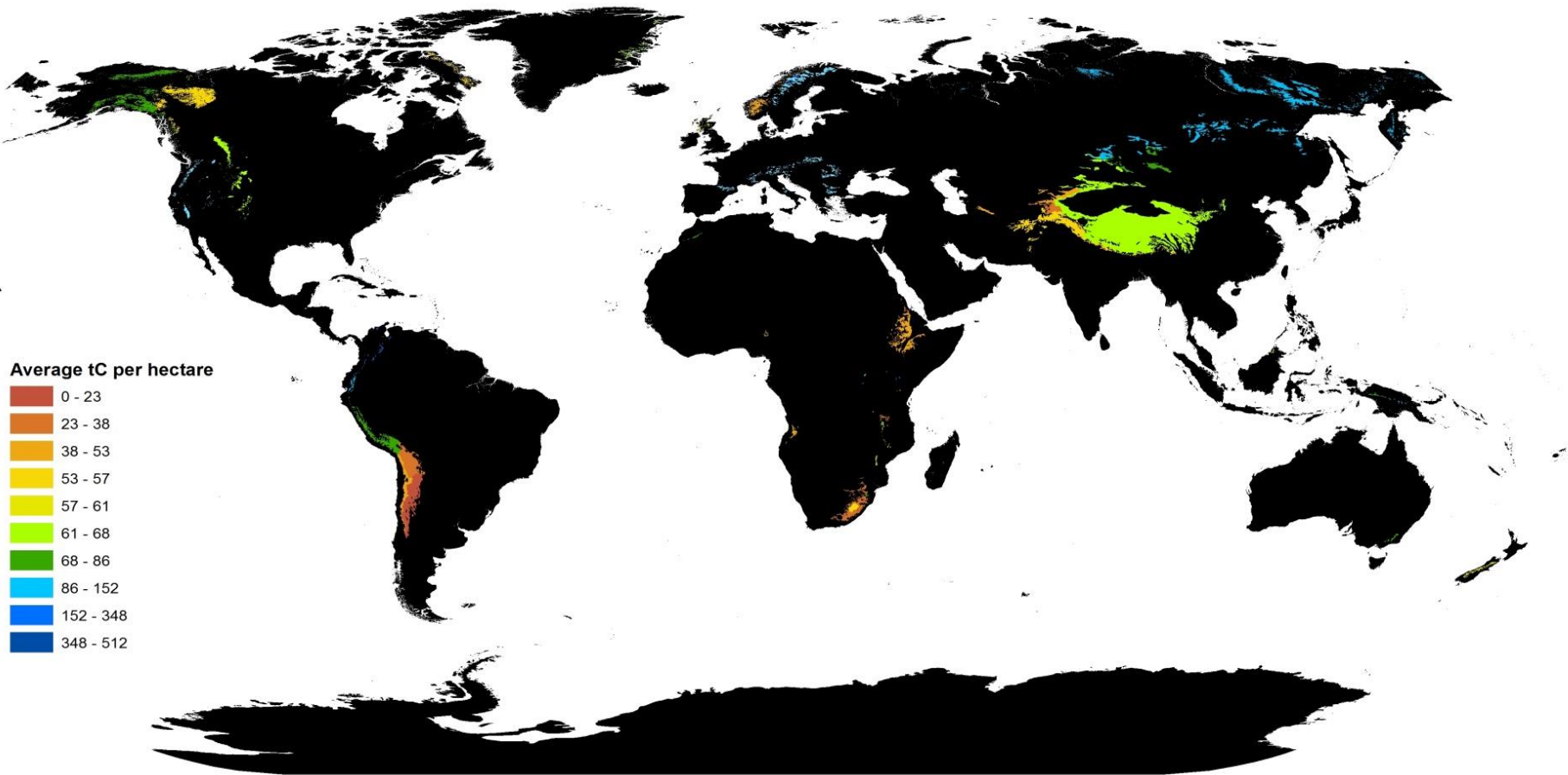
Tibetan Plateau grasslands, China (Credit: Aziza Horsham)



Alpine dwarf shrubs, Buendner Alps, Switzerland (Credit: Unknown)

Ward *et al*, 2013 (confidential, under review)

Globally it is a huge carbon store which has a significant economic value based on its climate regulating ecosystem service.



Ward *et al*, 2013 (confidential, under review)

Conserving carbon stocks can lead to improved health of ecosystem services.

Figure 3: The importance of ecosystem services provide by mountains

Altitudinal Belt	Ecosystem Service										
	Downslope Safety		Water		Food		Fibre		Medicinal		Cultural
	Safety	Dams	Fresh water	Energy	Grazing	Crops	Fuel	Timber	Wild	Cultivar	Recreation
Alpine	●	●	●	●	◐	●	●	●	●	●	◐
Sub-alpine /Montane	●	▲	●	●	●	●	◐	◐	●	●	◐

Key: ● Very Important ◐ Important ▲ Relevant ● Not Relevant

Adapted from: Rashid et al (2005)

Carbon storage and climate regulation are but one of many ecosystems services.

The value of the world's ecosystem services and natural capital

Robert Costanza^{*,†}, Ralph d'Arge[‡], Rudolf de Groot[§], Stephen Farber^{||}, Monica Grasso[†], Bruce Hannon[¶], Karin Limburg^{#,*}, Shahid Naeem^{}, Robert V. O'Neill^{††}, Jose Paruelo^{‡‡}, Robert G. Raskin^{§§}, Paul Sutton^{||||} & Marjan van den Belt^{¶¶}**

“For the entire biosphere, the value (most of which is outside the market) is estimated to be in the range of US\$16–54 trillion (1012) per year, with an average of US\$33trillion per year. Because of the nature of the uncertainties, this must be considered a minimum estimate. Global gross national product total is around US\$18 trillion per year”

If the carbon price is high enough it could provide an incentive to encourage more sustainable 'landuse' practices that preserve carbon stocks.



Threats to mountain ecosystems & catchments



**HIGH-ALTITUDE GRASBERG MINE,
PUNCAK JAYA, INDONESIA**



**INVASIVE PEST SPECIES
SOUTHERN ALPS, NZ**



**INTENSIVE DAIRY FARMING
KYRGYZSTAN**

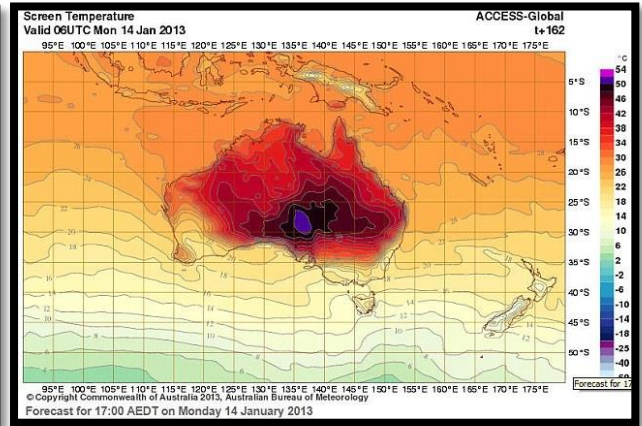


WILDFIRES, CHILEAN ANDES



TOURISM DEVELOPMENT, CANADA

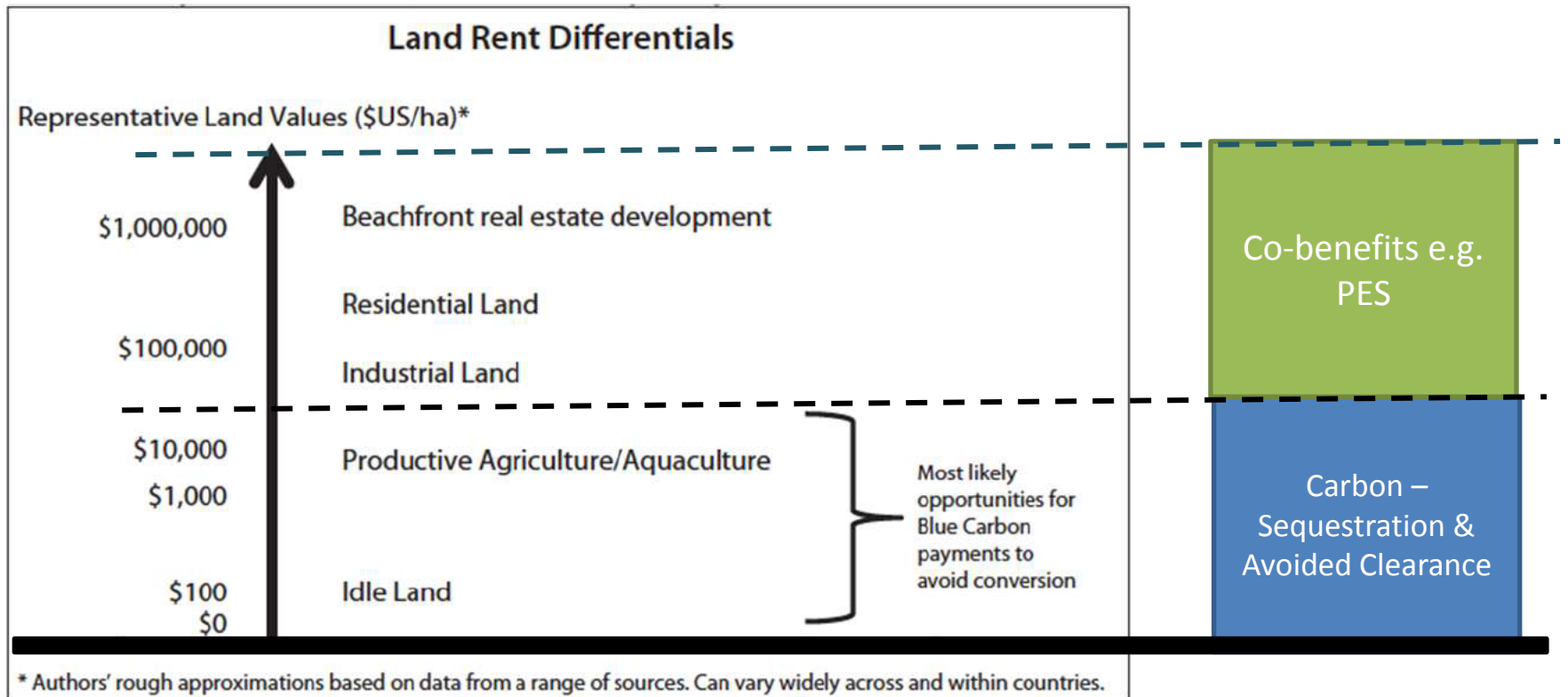
CHALLENGES FOR AUSTRALIAN MOUNTAINS...



Protected (HA)	Non-protected (HA)	Percentage <u>not</u> protected
1,214,902	773,912	36.3%



Carbon pricing aims to change 'the economics' by providing a development alternative...



Adapted from: Gordon, 2012

There is an immense opportunity to leverage carbon finance for the conservation of mountain-based ecosystems...

To date, this has not happened.

There is a great need to build knowledge and capacity in this area to enable private sector, government and NGOs to work together to leverage carbon finance.

This is incredibly important in managing project risk and understanding the opportunity.

Fundamentally, we first need to understand how carbon pricing and emissions trading (cap and trade) schemes work.

Enter **CarbonGame**.



Run in many countries, for leading private, government and non-government organisations.



Australian Government



United Nations Environment Programme



United Nations Framework Convention on Climate Change



UNIVERSIDAD DE CHILE



THE OBJECTIVES OF TODAY

- 1) How cap-and-trade schemes work?
- 2) How companies think about ETS compliance strategy:
 - I. Carbon management?
 - II. Carbon abatement?
 - III. Carbon Offsets?
- 3) How supply and demand for permits and offsets influences carbon price and therefore the development of carbon offset projects.

And have some fun.... and win a big prize!

WELCOME TO TASLAND

Welcome to Tasland.

Prime Minister Barry Ryan has introduced an ambitious emissions trading scheme (ETS), with the objective of reducing Tasland's greenhouse gas emissions by 40% over 3 years.



WELCOME TO TASLAND



Key Design Parameters

Type: Cap & Trade

BAU emissions: 31,520,600 tCO₂e

Caps: Year 1: 28,000,000 tCO₂e

Year 2: 24,000,000 tCO₂e

Year 3: 18,912,360 tCO₂e

Auction: Sealed-bid, yearly

Banking: 10% of total liability

Kyoto Offsets: Yes, unlimited

Penalty Rate: \$65 tCO₂e
then increasing each year



PERSONALITIES...

CARBON GAME



CARBON MARKET REGULATOR
GOVERNMENT OF TASLAND

Paul Dargusch
Director General



Department of
Environment &
Sustainability

Adrian Ward
Chief Administrator - TETS



P.R.I.C.S
Prudential Royal Investment Corporation of Silverbeach

Paul Dargusch
Dodgy Broker

COUGAR CARBON CONSULTANTS

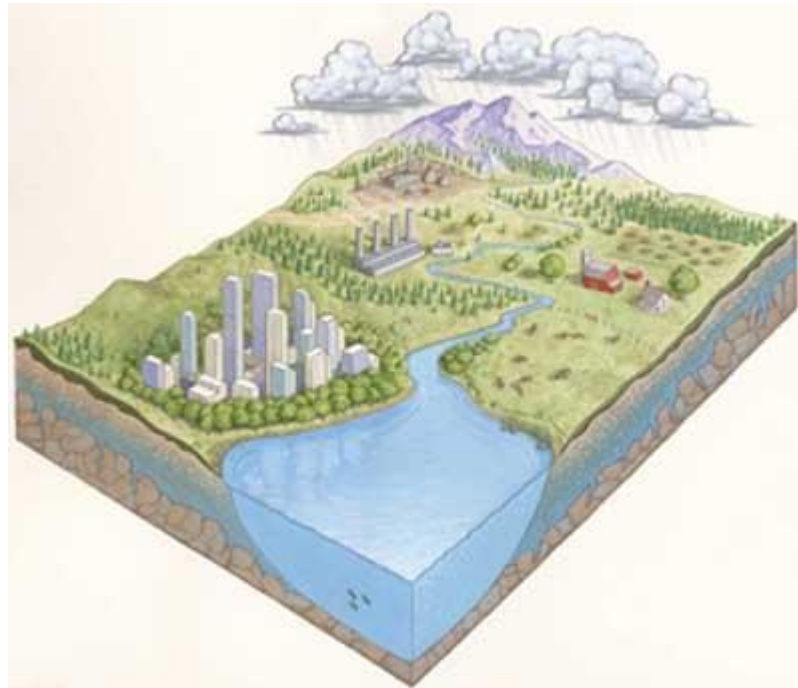
Adrian Ward
Senior Advisor



CARBONGAME PROCESS



The question remains – to what extent can they be used to support the management of upland watershed areas?



Firstly, some carbon offset project ideas for you to consider:

- Reforestation, Afforestation, Revegetation
 - Avoided deforestation (REDD+)
 - Fertiliser management
 - Pest (animal and plant) control
 - Wildfire management
 - Soil carbon management

We essentially have two ways in which emission saving technologies and practices can be funded.

CARBON MARKETS

Creation of Carbon Offsets
e.g. 1 tCO₂e reduction = 1 CER

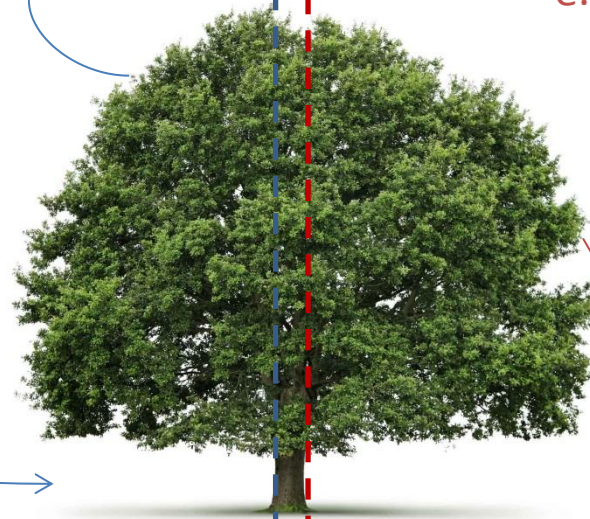
Sale of Carbon Offsets
e.g. for compliance or
voluntary reasons

\$

CARBON FINANCE

Grants & Subsidies
e.g. Green Climate Fund

\$



Currently the carbon offset price is too low to encourage new projects ('innovation') that reduce CO₂e...

Price



Volume



However there is lots of direct funding (not affected by market price) available to support mitigation projects...

Sources of Funding	Mitigation (USD Billion)	Proportion of Total Financing
Project Developers	\$115.0 – \$129.3	35%
Corporate Actors	\$69.3 – \$80.5	21-22%
Households	\$32.3	9-10%
Institutional Investors	\$0.6	0%
Commercial Financial Institutions	\$30.7 – \$40.4	
Venture capital, private equity and infrastructure funds	\$2.4	0%
TOTAL PRIVATE FINANCE	\$250.3 – \$285.5	76-77%
Governments Budgets	\$14.9 – \$18.2	5%
National Finance Institutions	\$37.5	10-11%
Multilateral Finance Institutions	\$18.3	5-6%
Bilateral Finance Institutions	\$8.6	2-3%
Climate Funds	\$1.1	0%
TOTAL PUBLIC FINANCE	\$80.4 – \$83.7	23-24%
TOTAL MITIGATION FINANCE	\$330.7 – \$369.3	100%

Table 7 International Annual Flows Climate Change Mitigation for 2011 (Buchner et al. 2012)

The UN led Green Climate Fund is the biggest fund.

- Launched at COP17, objective to raise \$100 billion a year by 2020. To kick-start environmental projects. Fully operational by 2014.
- Based in South Korea, the Fund will provide simplified and improved access to funding, including direct access, basing its activities on a country-driven approach and will encourage the involvement of relevant stakeholders, including vulnerable groups and addressing gender aspects.
- The Green Climate Fund was designated as an operating entity of the financial mechanism of the UNFCCC, in accordance with Article 11 of the Convention.
- Administered via Nationally Appropriate Mitigation Actions (NAMAs), REDD+, buying up CERs and other schemes.

Now that you know a bit about carbon markets, carbon finance and emissions trading, what ideas do you have for using these mechanisms to support upland watershed management activities?

A few final thoughts...

- While carbon markets and carbon finance are an attractive proposition, they are complicated and risky.
- However, not leveraging climate finance would be a missed opportunity.
- It is critically important the organisations obtain the knowledge and skills to build the capacity and partnerships to capitalise on the opportunities.
- Projects should be thoroughly thought through to ensure they align with the principles of integrated watershed management and avoid unexpected consequences.

Voluntary Survey – Please complete this quick online survey to help me with my research:

<http://www.surveymonkey.com/s/BBXGNQX>

Many thanks!!!

Appendix - CARBON FINANCE

Fund	Description	Fund Value and Type	Applicability for the NR Industry
MULTILATERAL SOURCES			
United Nations – Green Climate Fund	<p>Adopted as the financial mechanism of the UNFCCC at the end of 2011 and to be operational by 2014. It aims to become the main multilateral financing mechanism to support climate action in developing countries.</p> <p>Recipient countries will submit proposals through their National Designated Authorities (NDAs). Multilateral entities will also be able access financing. A private sector facility will be established to enable direct and indirect private sector financing.</p>	<p>US\$100Bn</p> <p>Grants, concessional loans</p>	<p>Specific modalities yet to be determined but potential for the NR industry to demonstrate an industry-wide strategy for emissions reductions.</p> <p>Will probably need to demonstrate alignment to NAMAs.</p>
The World Bank (and other multi-development banks) – Clean Technology Fund (CTF)	<p>Aimed at large scale emissions reductions. Provides concessional financing with a grant element tailored to cover the identifiable additional costs of the investment necessary to make the project viable.</p> <p>Support investment programmes that constitute a dominant part of a country's low carbon development strategies. Works with Governments to set up Clean Technology Investment Plans for example in India, Indonesia, Colombia, Philippines, Thailand and Vietnam.</p>	<p>The CTF and SCF are part of the World Bank's Climate Investment Fund. To-date US\$6 billion has been programmed through CIF in over 48 countries through over 200 programs.</p> <p>Grants, concession loans, loans, guarantees</p>	<p>Both public and private sector organisations can apply.</p> <p>The private sector can submit individual large-scale projects or a program, which aggregates smaller projects.</p> <p>As Malaysia is eligible to receive official development assistance (ODA) it can apply to the CTF.</p>
The World Bank (and other multi-development banks) – Strategic Climate Fund (SCF)	<p>Fund includes the Scaling-up Renewable Energy program (for low income countries only), Forest Investment Program and Pilot Program for Climate Resilience.</p>	<p>Grants, concession loans, loans, guarantees</p>	<p>Low-income countries that are NR growers can access PPCR.</p> <p>REDD initiatives can link to FIP.</p>
Partnership of 10 agencies including TWB, UNDP, UNEP, FAO – Global Environment Facility (GEF-5)	<p>GEF works in collaboration with an implementation agency – such as the World Bank, the UNDP and UNEP. It provides grants to developing countries for climate-related programmes and projects. GEF allocates specific amounts to various developing countries, who then submit applications for specific focal areas. As well as operating the GEF trust fund GEF also administers the Special Climate Change Fund of US\$110M to support technology transfer projects and programmes for sustainable development. Also operate the GEF Least Development Countries Fund US \$65M.</p>	<p>GEF-5 = US\$1.35Bn across 5 years</p> <p>Grants</p>	<p>Determine specific programs and eligibility.</p>

The World Bank – Carbon Partnership Facility (CPF)	<p>A new facility that comprises of two trust funds 1) the carbon asset development fund (CADF) to prepare and implement emission reduction programs and 2) the Carbon Fund (CF) to purchase carbon credits from the pool of emission reduction projects. Targets scaled-up programmatic approaches to enable carbon finance to support partner country initiatives in their efforts to move towards low-carbon economies. Targets areas not effectively reached by the CDM in the past, such as energy efficiency and will pilot citywide carbon finance programs.</p> <p>CPF includes a number of governments as buyers including Spain, Norway, Italy, the EU and Carbon Sourcing North America LLC. Seller participants include Thailand (streetlights project), Vietnam (RE), China (Hebei regional farm biogas project).</p>	<p>Finance</p> <p>€132.5M – capital value</p>	<p>Review first tranche of programs. Possible existing programs the NR industry can participate in (for example Vietnam’s Renewable Energy Development Program).</p> <p>Determine if the Malaysian Government aims to establish a link with the CPF in the future.</p>
The World Bank – Forest Carbon Partnership Fund	<p>2008. Building capacity and developing systems for 37 REDD countries.</p>	<p>\$447M (\$232M for Readiness Fund and \$215M for Carbon Fund)</p> <p>Grants</p>	<p>Eligible REDD countries can submit a proposal to the FCPF (several rubber producing countries are eligible – Malaysia is not).</p>
The World Bank – Other Carbon Funds	<p>Purchase carbon credits from CDM projects in developing countries. Developed countries provide funding in return for CERs for their own compliance. The carbon facilities at the WB enable countries to benefit from the carbon market while using the WB infrastructure, network and expertise. The WB may also pay for carbon asset development costs in some cases.</p> <p>Includes: Prototype Carbon Fund, BioCarbon Fund, Community Development Carbon Fund, Italian Carbon Fund, Netherlands CDM Facility, Danish Carbon Fund, Spanish Carbon Fund, Umbrella Carbon Facility T1, Umbrella Carbon Facility T2.</p>	<p>Total World Bank funds US\$2.5Bn.</p> <p>Possible upfront payment (up to 25% of transaction amount and some possible post-2012 purchases.</p>	<p>A number of these funds have closed. NR industry has the potential to develop projects that align to one of WB’s carbon funds – WB will pay for CERs and possibly assist in development costs of project, however given the current low CER price these funds represent limited opportunity.</p>
United Nations – REDD+ Program	<p>UNDP, UNEP and the FAO have partnered to develop the REDD+ program to reduce emissions from deforestation and degradation. Sixteen countries have received funding allocations.</p>	<p>US\$59.3 million allocated to the initial programmes.</p> <p>Grants</p>	<p>Potential opportunities where the rubber producing countries are also REDD partners.</p>
Asian Development Bank – Carbon Market Program	<p>The Carbon Market Program is the ADB’s flagship climate change program that provides support to greenhouse gas mitigation projects in developing countries in Asia and the Pacific that are eligible under the CDM. This program provides upfront financing in return for future CERs, as well as technical and marketing support.</p>	<p>Asia Pacific Carbon Fund US\$152M</p> <p>Future Carbon Fund US\$115M - Financing up to 75% of the expected CER value.</p> <p>Carbon finance, co-finance and technical support.</p>	<p>Potential for the NR industry to develop CDM projects co-financed by the Future Carbon fund for renewable energy, energy efficiency or methane capture and utilisation projects.</p>

Asian Development Bank – Clean Energy Financing Partnership Facility	<p>The Facility promotes energy security and has a particular focus on technologies that mitigate climate change. The Facility comprises a multi-donor Clean Energy Fund (CEF) supported by the governments of Australia, Norway, Spain and Sweden; an individual donor, the Asian Clean Energy Fund (ACEF), supported by the government of Japan; and the newly established Carbon Capture and Storage Fund (CCSF) supported by the Global Carbon Capture and Storage Institute.</p> <p>About 30% of CEFPPF’s resources will be used for standalone technical assistance projects and direct charges; and about 70% will be used for grant components of investments.</p>	<p>Total target is \$250 million.</p> <p>Co-financing, grants, technical assistance</p>	<p>Assess application procedures and current status of funds.</p>
Asian Development Bank – Energy Efficiency Initiative	<p>The ADB has a number of energy efficiency and renewable energy initiatives, including both demand and supply side energy efficiency programs, and programs that increase the use of biomass, solar, wind and hydro as renewable energy alternatives.</p>	<p>Unknown</p>	<p>Assess application procedures and current status of funds.</p>
European Investment Bank – Post-2012 Carbon Credit Fund	<p>The Fund is focused on purchasing Kyoto-compliant carbon credits generated after 2012, potentially up to 2020. It will enter into forward agreements with project owners for the delivery of Certified Emission Reductions (“CERs”) and will on-sell to compliance and other buyers of carbon credits as and when the shape of the post Kyoto regime emerges.</p>	<p>€125 million</p> <p>Carbon finance</p>	<p>Projects must generate at least 250,000 CERs.</p>
European Investment Bank – EIB-KfW Carbon Programme II	<p>The fund targets sellers of CERs or ERUs who wish to enter into an emission reduction purchase agreement (ERPA) with KfW (the German Government-owned development bank). The focus of the fund is on LDCs and PoAs, however it will also accept projects outside of this for renewable energy, energy efficiency, methane avoidance.</p>	<p>€100 million</p> <p>Carbon Finance</p>	<p>Low-income countries that are NR growers, existing relevant PoAs, and new CDM projects for renewable energy, energy efficiency and methane avoidance.</p> <p>Projects must generate a minimum 20,000 CERs per annum.</p>
European Commission – Global Energy Efficiency and Renewable Energy Fund (GEEREF)	<p>Public-Private Partnership set up by EU, Germany and Norway. Invests in private equity funds that provide equity finance to small and medium-size project developers and enterprises. These private funds must have pipeline of environmentally and financially sustainable projects.</p>	<p>€112 million raised – aiming for €200 million in 2013.</p> <p>Equity Finance</p>	<p>To determine applicability need to review the specific equity funds financed. In 2011 GEEREF provided €10 million to the Armstrong South East Asia Clean Energy fund to provide early capital to renewable energy infrastructure projects in Thailand, Malaysia, Indonesia and the region’s emerging markets.</p>
400 partners including 45 governments – Renewable Energy and Energy Efficiency Partnership (REEEP)	<p>Assists Governments in creating favourable regulatory and policy frameworks and promotes innovative finance and business models to activate the private sector. Current focus on Brazil, China, India, Indonesia and South Africa. Governments, regulators, development finance institutions, NGOs and private firms, can put forward proposals.</p>	<p>US\$318M</p>	<p>Assess application procedures and current status of funds.</p>

BILATERAL FINANCING			
Bilateral financing institutions	BFIs include AFD, KfW, JICA and OPIC. Some allocate their countries bilateral ODA contributions. Some of the BFIs target certain selected developing countries or regions. Provide concessional loans and grants	Various Concessional loans and grants.	Need to review these to determine where links might be for NR – for example JICA has provided a concessional line of credit for EE improvement in small and medium industries in India.
Germany – International Climate Initiative	Funds climate change mitigation, adaptation and biodiversity projects. Projects must align to one of focus areas: climate-friendly economy, adaptation, carbon sinks/ REDD+, and biodiversity.	Approved funding \$900 million Grants & Concessional loans	Potential opportunities for emission reduction or carbon sink projects.
Australia - International Forest Carbon Initiative	Supports global efforts to establish REDD+ under the UNFCCC.	US\$125M.	REDD+ countries that are also NR producers may benefit. Review existing programs and determine dates for future funding rounds.
Indonesia – Climate Change Trust Fund	Established by Indonesia’s Government the fund receives non-refundable contributions from multilateral and bilateral sources. Aims to achieve Indonesia’s goal of becoming a low carbon economy. The UK, Australia and Sweden participated in establishing this.	US\$5.4M.	Potential for the NR industry in Indonesia to establish projects that facilitate land-based emissions reductions or contribute to energy security and emissions reductions.
UK - International Climate Fund	Assist developing countries adapt to climate change, embark on low carbon growth and tackle deforestation.	US\$78.2 million Capital contributions/ concessional loans and grant finance	Review specific programs and eligibility.
Japan - Fast Start Finance	Assist developing countries address climate change. Approximately 50% of this financing is focused on Africa and LDCs. Contributes to multilateral funds such as the CTF.	US\$15Bn in public and private financial assistance	Review specific programs and eligibility.

Sources: www.climatefundsupdate.org/listing, www.climatefinanceoptions.org, www.wbcarbonfinance.org

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