

An Ethics-based Climate Agreement for the South Pacific Region

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Received: 17 July 2006 / Accepted: 24 August 2006
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Abstract The aim of this article is to describe a comprehensive regional climate agreement for the South Pacific region. This agreement would integrate the usual view of climate negotiations among the developed countries as the sharing of mitigation costs, with that of the Pacific Islands, which focuses on the disproportion between responsibility for, and the efforts of, adaptation to burdens imposed by climate impacts. The agreement, moreover, is grounded on sound principles of justice and criteria of equity which give greater legitimacy to it and can persuade parties with conflicting interests to cooperate more closely on collective actions. On the mitigation side, discussion of the initial allocation of endowments focuses on the criterion of differentiated equality, taking account of undeserved inequalities as suggested by Rawls' theory of justice as fairness. Endowments are initially distributed according to a formula whose reference is equal per capita distribution corrected for the most striking unjustifiable inequalities. Possibly a sound benchmark for the just financing of adaptation activities is the criterion of differentiated historical responsibility, again backed by Rawls's theory, while the allocation of adaptation resources can be based on the criterion of lack of functionings, as substantiated in Sen's capability approach. In practical terms, it is possible to envision the creation of an adaptation fund where each single contribution is proportional to cumulative emissions net of undeserved inequalities, and which allows participation by poorer vulnerable countries proportionally to their levels of human development.

Keywords Adaptation · Climate Change · Equity · Justice · Mitigation · Regional Climate agreement

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Abbreviations

COP	Conference of the Parties
GHG	Greenhouse gases
HDI	Human Development Index
IPCC	Intergovernmental Panel on Climate Change
MOP	Meeting of the Parties
RTJF	Rawls' theory of justice as fairness
SCA	Sen's capability approach
SPCT	South Pacific Climate Treaty
UNDP	United Nations Development Programme
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change

1 Introduction

The adverse impacts of global climate change are unevenly distributed across regions and countries, for they ultimately depend on the sensitivity, vulnerability and adaptability of different natural and social systems. In the South Pacific region, Australia and New Zealand, which are its most developed and populated countries, can by and large rely on high adaptive capacities (IPCC, 2001b) to deal with climate impacts, whilst in the small island states of the region the “[a]daptive capacity of human systems is generally low.... and vulnerability high”, so that they “are likely to be among the countries most seriously impacted by climate change” (IPCC, 2001b, Table SPM 2, p. 17). The Pacific Islands¹ are in fact faced by dangerous climate impacts, mainly produced by large carbon emitters, “potentially undermining their national sovereignty” (Barnett & Adger 2001, p. 1), and thus have sound ethical arguments for claiming that industrialized countries are responsible, in spite of their limited negotiating power.

¹ It is impossible to grasp here the geographical, social and cultural complexity of the Pacific Islands. For instance they contain some 20% of the world's languages but only 0.1% of the world's population (Barnett, 2003a). Thus any general consideration is to be taken as referring to an ‘ideal’ Pacific Island, although the Polynesian and Micronesian archipelagos are somewhat similar, whilst the Melanesian ones have their own characteristics (Barnett, 2003a). Specifically, I consider only the independent states of the region: Australia, FSM (Federated States of Micronesia), Fiji, Kiribati, MI (Marshall Islands), Nauru, NZ (New Zealand), Palau, PNG (Papua New Guinea), Samoa, SI (Solomon Islands), Tonga, Tuvalu, Vanuatu. Cook Islands is included because it has a particular status of dependency: “self-governing in free association with New Zealand; Cook Islands is fully responsible for internal affairs; New Zealand retains responsibility for external affairs and defense, in consultation with the Cook Islands”. (CIA, The World Factbook.

Internet: <http://www.cia.gov/cia/publications/factbook/geos/cw.html>, accessed 9 June 2006). Niue is considered for similar reasons “self-governing in free association with New Zealand since 1974; Niue is fully responsible for internal affairs; New Zealand retains responsibility for external affairs and defense; however, these responsibilities confer no rights of control and are only exercised at the request of the Government of Niue” (CIA, The World Factbook. Internet: <http://www.cia.gov/cia/publications/factbook/geos/ne.html>, accessed 9 June 2006)

Both Australia and New Zealand are involved in the definition of a regional climate policy, albeit from different perspectives and with diverse approaches to international cooperation. Indeed, one of the five themes of the July 2003 Australia–New Zealand Climate Change Partnership² reads: “[w]orking together with our Pacific Island neighbours to address the regional challenges posed by climate change”. Australia seems to show increasing attention to climate concerns, despite the somewhat inconsistent position of its government (Christoff, 2005; McDonald, 2005) which has not ratified the Kyoto Protocol.³ The former Australian Minister for the Environment and Heritage David Kemp, for example, has repeatedly affirmed his country’s regional steadfastness against climate change.⁴ New Zealand’s commitment to confront climate change on a regional scale is more explicit, and pays particular attention to the support of adaptation initiatives in Pacific Island Countries, “which are on the front line of climate change impacts”⁵. In fact, New Zealand has always shown a certain determination to cooperate with the poorer countries in the region and help them to cope with climate impacts as testified, for instance, by its announced intention to accommodate Pacific Islanders should they be forced to move by climate change (Barnett, 2003b).

Moreover, in a more pragmatic sense, foreign policy and humanitarian reasons demand that Australia and New Zealand assume a leading role in combating climate change in the South Pacific. The contention of this article is that these reasons can be better served in the climate domain by the promotion and institution of a regional climate agreement underpinned by sound principles of justice and backed by viable criteria of equity.

Climate change is acknowledged to have a number of repercussions on the security⁶ of states, communities and individuals (Barnett, 2003b). The Pacific Islands could in fact be subject to a variety of potential climate impacts, from coastal erosion, to problems with the water balance, biodiversity loss, reduction in fisheries, and disruption of the tourism industry (IPCC, 2001b). These threats may alter environmental and socio-cultural conditions, undermine the economies, and ultimately affect the national and human security of the Pacific Islands (Edwards, 1999;

² Internet: <http://www.greenhouse.gov.au/international/partnerships/newzealand>, accessed 9 June 2006.

³ Australia has, for instance, recently (January 2006) launched with other partners (China, India, Japan, the Republic of Korea and the USA) the ‘Asia–Pacific Partnership on Clean Development and Climate’. This partnership is a non-legally binding agreement, entirely voluntary and technology-based, for the development and transfer of technology mainly for mitigation activities.

⁴ For instance, in a 2003 speech to the Australian Resources and Energy National Conference (Internet: <http://www.deh.gov.au/minister/env/2003/sp16jul03.html>, accessed 9 June 2006), Kemp, after acknowledging that “most of the warming observed over the last 50 years is attributable to human activity”, went on to say that Australia is “actively engaged in promoting truly global action” through a “multi-lateral process ... accompanied by a growing network of bilateral and pluri-lateral actions”.

⁵ Submission from New Zealand to the ‘Dialogue on long-term cooperative action to address climate change by enhancing implementation of the Convention’, First workshop Bonn, 15–16 May 2006—Dialogue working paper 14 (2006). Internet: unfccc.int/files/meetings/dialogue/application/pdf/working_paper_14_nz.pdf (accessed 15 June 2006).

⁶ Both national and human security. The concept of national security is based on the prevention of threats to autonomy and territorial integrity, while the prime feature of human security is its focus on individuals rather than on states. The 1994 UNDP report on Human Security repeatedly stressed the essential properties of the notion of human security: its people-centredness, universality, interdependency of its components, and its preventive scope.

Barnett, 2003a, b), and they may consequently have diverse repercussions on neighbouring countries. The security problems of the Pacific Islands therefore assume the connotation of a foreign policy issue that requires proper responses, particularly from Australia and New Zealand as the region's most developed countries. The crux is not the possible eruption of "inter-island-state violent conflicts" (Barnett, 2003a, p. 7), but rather the possibility of intra-country and international migration. Migration to more developed islands would impose further pressure on urban areas and weaken land tenure. These circumstances would compound the impacts triggered by climate change and eventually generate substantial international migration flows to developed countries with settled populations of Pacific Islanders, particularly Australia and New Zealand.

To prevent, or at least to reduce, the destabilizing effect of climate change, Australia and New Zealand should simultaneously adopt two strategies on a regional scale: (1) curtailing carbon emissions, and (2) supporting vulnerable and endangered countries (Barnett, 2003a). Hence, the framing of a regional climate agreement for the South Pacific that deals simultaneously with mitigation and adaptation issues seems a promising way to incorporate these two broad policy stances into an inclusive and coherent framework. Moreover—and this relates to the humanitarian reason why Australia and New Zealand should actively engage in climate initiatives—this foreign policy strategy should be centred on the promotion of sustainable human development in the region. Given the underdevelopment and the poverty that is so much part of the South Pacific, it is in fact essential to empower the Pacific Islands societies (Rudd, 2002) by fostering institutional and governance capacities. Again, a comprehensive regional climate agreement seems to be a more focused way to channel resources from developed to developing countries, so that institutional capacities and structures can be developed. In fact, funds should be used not only for direct climate-related actions, but also to support the collective dimensions of social capital, which concern networks that are public goods (Adger, 2003) and may ultimately favour the translation of monetary resources into productive climate initiatives.

A regional framework can also be seen as a more just and efficient way to direct foreign aid from richer to poorer countries in the area. This goal is attainable not only through adaptation and damage compensation schemes but also via the money transfers generated by the purchase of allowances⁷ by rich greenhouse gas (GHG) emitters (net buyers of permits) from poorer regional players (net sellers of permits). These resources should therefore be used to pursue a coherent regional strategy against climate change spelled out by every government and civil society group and which ultimately relies on the growing consciousness and capacities of all subjects involved. In fact, the success of a regional climate treaty, like that of any environmental agreement, crucially depends on the participation of stakeholders, who should eventually reach consensus on it, by taking part in the processes for its definition and implementation.

The aim of this article is therefore to describe an ethics-based, comprehensive regional climate agreement for the South Pacific. Section 2 analyses the regional

⁷ For instance, the total amount of Australian foreign aid in 2003–2004 was 354 US\$ million, whereas the flow of resources from Australia to the Pacific Islands, under the permit trading scheme envisioned in Sect. 3, in the two extreme scenarios would amount to between 582 US\$ million to 253 US\$ million. On averaging the scenarios, the figure would be 403 US\$ million (See Table 4, and referring to a price of permits of 5.5 US\$ per tonne of carbon dioxide, which is the average value of the range considered to be most likely by the Australian Greenhouse Office, 2002).

perspective on climate change with particular regard to the South Pacific. The following sections set out the framework of the climate agreement envisaged, both in the mitigation domain (Sect. 3) and in the adaptation domain (Sect. 4). Finally, the concluding remarks (Sect. 5) suggest some implications and summarize the discussion.

2 A regional perspective on climate change in the South Pacific

Environmental issues are usually settled through appropriate decentralized solutions, since benefits and costs are by and large clearly specified and confined to specific areas (Oates, 1998, 2001). Climate change is a different matter, however, because it is emissions by sources throughout the world that cause the concentration of GHGs in the atmosphere. Climate change is in fact a global⁸ public good⁹ (Sandler, 1998), and effective mitigation and adaptation strategies must involve all parties. Any autonomous initiative to address climate change has almost trivial effects: as a consequence, independent actions will prove far less effective than concerted ones. This characteristic, which is a specific trait of global public goods, should apparently offer strong incentives, from a theoretical standpoint, for collective action by both developing and developed countries (Shue, 1999). Public goods have two particularly crucial features: non-excludability and non-rivalry¹⁰. Global public goods have a third dimension in that they provide globally available benefits unconstrained by national boundaries. These features eventually provoke policy failures, which severely restrict collective action, especially in the case of climate change (Carraro and Siniscalco, 1993).

Initiatives against climate change should be undertaken at the supranational level. Each country must consequently determine the optimal level of emissions and of other climate-related actions. Regrettably, however, there are weak political and economic incentives for attaining and maintaining these goals. Countries tend to decide non-cooperatively, according to their own cost–benefit ratios. Besides, there is no legally binding mechanism with which uninterested sovereign nations can be forced to enter into an agreement on the provision of global public goods.¹¹ Nonetheless, there is widespread consensus on the need for commitments—requirements that a state voluntarily assumes—to keep together cooperative regimes: before undertaking costly actions, countries require assurance that other signatories too will do their part as a form of guarantee of mutual actions (Bodansky, 2003). This is the main reason why an aspirational, non-binding, voluntary agreement like the United Nations Framework Convention on Climate Change (UNFCCC) must rely on the targets and timetables set forth by the Kyoto

⁸ It is sometimes considered to be an international public good: the two terms are basically synonymous. Global (or international) public goods differ from local (national and sub-national) public goods in that they have cross-border effects.

⁹ More specifically, global climate stability is a global public good, and global climate change is the corresponding global public ‘bad’.

¹⁰ Non-excludability implies that it is impossible to prevent everyone from enjoying the benefits deriving from the consumption of the good. Non-rivalry entails that the consumption of the good by one person does not affect another’s consumption of it.

¹¹ Nordhaus calls this situation the “Westphalian dilemma”: “Under international law as it developed out of the 1648 treaty of Westphalia and evolved in the West, obligation may be imposed on a sovereign state only with its consent” (Nordhaus, 2002, p. 3).

Protocol, a specific and binding climate treaty. But Kyoto is not the only possible way to deal with climate change. Though not ‘fatally flawed’ as some interested voices claim, the Protocol is far from being widely accepted by politicians around the world. The scientific community too expresses perplexity: many climatologists and social scientists point out that it is a fragile agreement, whose potential outcomes are limited, especially after the US withdrawal (Barrett & Stavins, 2003). Nor is the Kyoto Protocol the final stage in the international climate negotiating process. It is rather a first undertaking that can be strengthened in the next commitment periods and complemented by more limited regional agreements. In fact, the Protocol is more a set of different regional agreements than a proper global treaty (Egenhofer & Legge, 2001), insofar as it incorporates a number of special provisions for different groups of countries. Various authoritative studies also suggest that a global climate treaty is highly controversial, whereas multiple regional treaties are more likely to encompass diverse interests (Kameyama, 2004) and are thus more likely to be effective. States are presumed to have more incentives to enter into a regional agreement than a global one, because the former can reflect local specificities more closely, reduce risks of non-cooperation, and lower transaction costs (Asheim, Bretteville Froyn, Hove, & Menz, 2003).

The problems of a binding global climate treaty lie mainly in its complexity in terms of the parties involved, the institutional capacity required, and the rigidity of commitments. Kyoto is ambitious in every respect: it involves a large number of countries—it is global, has sophisticated implementation mechanisms, and sets demanding targets and stringent timetables (Bodansky, 2002). Moreover, it reflects the developed countries’ view of climate change as basically a threat to the environment (Muller, 2002). Accordingly, environmental effectiveness and the cost of mitigation efforts have been key criteria in the definition of the actions and instruments of the Protocol. Developing countries, by contrast, perceive climate change as primarily an issue, which affects human well-being, and they expect stronger adaptation and compensation initiatives. The harm is in fact caused to humans, who must suffer the physical impacts generated primarily by others, namely the countries of the industrialized North (Gupta, 2000; Muller, 2002; Shukla, 1999). Consequently, the entire negotiating process has been characterised by divergent perspectives, which have assumed ideological overtones and produced an atmosphere of reciprocal distrust (Grubb, 1995; IPCC, 2001b). Alternatives to the Kyoto approach should be both more unassuming and more closely focused on reducing the risk of the abovementioned concerns. The large number of countries involved and the decision to undertake the negotiations through the UN bureaucracy have made the process cumbersome. The Protocol requires administrative, legislative and economic skills that pose major challenges for the institutional capacities of even developed countries. Absolute targets and stringent timetables render the costs dependent on unknown elements such as policy efficiency, technological innovation, rates of population and economic growth, and thus basically unpredictable (IPCC, 2001a, b, c).

On practical grounds as well, recent developments in international climate negotiations seem to acknowledge the complexity of an exclusively global approach

to climate change. For instance, COP 11 and COP/MOP 1¹² underline the importance of the integration of regional schemes into the future Kyoto Protocol regime (Muller, 2006). Australia has also espoused a regional initiative: in fact the Asia–Pacific Partnership is a voluntary, non-legally binding framework for regional cooperation to “advance clean development and climate objectives”¹³. Also the review of the Barbados Plan of Action, acknowledging the extreme vulnerability of the South Pacific region and demanding that climate negotiations pay particular attention to the special needs of the most vulnerable areas, maintains that a regional approach may be more attentive than a global one to the necessities of the weakest countries.¹⁴

To obviate the difficulties of a global climate treaty, a more viable climate architecture might be based on a regional emissions trading programme supplemented by adaptation activities and damage compensation schemes. With the complexity due to the number of parties reduced, and the consequent bureaucratic and administrative burdens eased, this approach would have a realistic chance of success. Moreover, referring to justice and equity¹⁵ in order to accommodate the different objectives of rich and poor actors, may alleviate the tension between developed and developing countries, particularly at a regional level where the concerns at stake are usually closely interwoven with other area-specific policy topics. Justice and equity are important factors in the wider acceptance of any climate agreement because they imply greater legitimacy and can persuade parties with conflicting interests to cooperate more closely in collective actions (Gardiner, 2004; Grubb, 1995; Pan, 2003; Shue, 1992, 2001). In short, consideration of the ethical dimension may help heal the breaches caused by the different perspectives on the essence of climate change and the consequent conflicting interests, so that the “common but differentiated responsibilities” demanded by the UNFCCC can be

¹² This conference, attended by some 10,000 participants, took place in Montreal from 28 November to 10 December 2005. It was one of the most productive conferences ever, and adopted more than 40 Decisions. It saw major improvements made to the operation of the Kyoto Protocol, and to the efficiency and strengthening of the Clean Development Mechanism. All countries agreed to undertake a dialogue (the ‘Dion dialogue’) on long-term cooperative action to address climate change, and developed countries also started to consider future commitments beyond the first Kyoto period.

¹³ Asia–Pacific Partnership on Clean Development and Climate (Internet: <http://www.dfat.gov.au/environment/climate/ap6/charter.html>. Accessed 17 June 2006).

¹⁴ The review of the Barbados Plan of Action recognizes that Pacific Islands are extremely vulnerable to the impacts of sea-level rise, climate change and climate variability, and stresses the importance of facilitating regional and inter-regional cooperation for combating climate impacts. These claims are repeatedly highlighted in the two main documents that support the review process of the Barbados Plan of Action, the ‘Mauritius Strategy’ (Internet: http://www.un.org/smallislands2005/pdf/sids_strategy.pdf. Accessed 17 June 2006), and—specifically for the Pacific region—the ‘Final Report to Follow-up on the Implementation of the Mauritius Strategy’ (Internet: http://www.sidsnet.org/docshare/other/20051109153111_draft_Pacific_report_v3.pdf. Accessed 17 June 2006).

¹⁵ In the climate debate the term ‘justice’ is often used interchangeably with ‘equity’ and ‘fairness’ (Ashton & Wang, 2003; Muller, 2001). However, although these notions are indisputably interconnected and complementary (Pan, 2003, p. 1), principles of justice—on their own or in composite theories of justice—exist independently before any process of judgement or interpersonal comparison has begun. ‘Equity’ instead refers to normative criteria used to orient the implementation of principle(s)/theory(ies) of justice, whilst ‘fairness’ pertains to the individual’s perception arising from a judgmental process, and is defined as “the rules relevant to a procedure, and...as the correct application of such rules to all cases...” (Hay, 1995, p. 501).

effectively addressed. Hence, in the case of a complex issue like climate change, it seems that reference to a normative ethical framework would provide a useful underpinning for international climate initiatives, especially in regard to the necessary involvement of poorer countries: “A just burden sharing regime is vital to ensure the wide participation from developing countries” (Shukla, 1999, p. 7). Besides, I believe that in a region of extreme inequalities such as the South Pacific, ethical issues might also provide reasoned elements for debate among regional stakeholders on the development of an agreed-upon framework to confront climate change.

In the light of these considerations I now describe¹⁶ a possible climate agreement for the South Pacific region (I call it ‘South Pacific Climate Treaty’, SPCT) based on justice and equity and which seeks to integrate the developed countries’ usual conception of climate negotiations as the sharing of mitigation costs with that of the developing countries which centres on the disproportion between the responsibility for, and the efforts of adaptation to burdens imposed by climate impacts. Such an agreement should thus focus on the costs and benefits both of mitigation efforts to reduce carbon emissions and of adaptation attempts to prevent the harmful effects of climate change and to compensate for residual non-adapted impacts.¹⁷ The former issue concerns cutbacks in GHG emissions and raises an unambiguous question of distributive justice: sharing the burden of mitigation is a matter of proportionality according to morally relevant quantifiable attributes. The latter issue concerns the perceivably fair distribution of adaptation processes, in terms of both the financing of prevention activities and the allocation of resources to adaptation activities and compensation for residual damages.¹⁸

3 The SPCT: The Mitigation Side

In the case of mitigation, meaning “an anthropogenic intervention to reduce the sources of greenhouse gases or enhance their sinks” (IPCC, 2001c, p. 3), the sharable burden consists of the costs and benefits of reducing carbon emissions. The most

¹⁶ Here I do not go into institutional aspects—e.g. description of administrative bodies and of the role they should play in favouring and implementing such an agreement— nor do I enter into the details of the participatory process, because this would imply a positive perspective, whereas my standpoint is basically normative.

¹⁷ I include among adaptation strategies also compensation for damages deriving from residual impacts that cannot be adapted because of costliness or impossibility (e.g., extreme and abrupt climatic events). In the theoretical perspective put forward here these can be seen as ex-post forms of adaptation.

¹⁸ The general normative ethical framework to which I refer (Grasso, DOI 10.107/s 10584-006-9158-7) deals with two other issues as well: the just subsequent exchange of endowments, and the procedural notion of wealth and power allowing a just international negotiating process. However, here I refer to an initial, situation and thus dwell on the definition of a just initial allocation of endowments, without considering the consequent exchange patterns. Similarly, procedural justice is only implicitly acknowledged when I refer to the relevance of participatory processes, in spite of the all-important role that it plays in any negotiation.

viable solution is the definition of an international tradable permits scheme.¹⁹ In this regard, the issue of the initial allocation of carbon endowments has generated considerable debate and a large body of literature, which centre on the flexibility and feasibility of such a framework to lessen the cost of attaining specific emission targets. The most frequently proposed schemes for granting GHG emission rights are allocation proportional to a reference year, and allocation on an equal *per capita* basis, with or without historical accountability (Neumayer, 2000). The equal *per capita* allocation of endowments without historical accountability is by and large considered the most favourable option to assure the “meaningful participation” of all parties, especially the least developed ones, demanded by the UNFCCC (Aslam, 2002; Baer, Harte, Herzog, Hultman, & Raymond, 2000). Unfortunately, the equal *per capita* approach also raises a number of concerns: it would in fact result in a very large wealth transfer from the developed to developing countries (Panayotou, Sachs, & Zwane, 2002) and would therefore be strongly opposed by the rich and influential countries.²⁰ Nonetheless, if the equal *per capita* allocation scheme were corrected in order to take account of the main differences among the demands of GHG emitting activities by countries, and if these corrections were also defensible on ethical grounds, the scheme might weaken the resistance of wealthier countries and gain more consensus.

The ethical underpinning of the SPCT mitigation proposal is John Rawls’ theory of justice as fairness²¹ (RTJF). RTJF is articulated into two principles, which guide equal, free, mutually disinterested and rational subjects in their judgements about institutional, economic and social arrangements. The first—the egalitarian principle—states that every individual has the same right to the most extensive system of

¹⁹ Although according to the seminal work by Weitzman (1974) a proper international carbon tax (a price mechanism) is more appropriate than a quantity mechanism like the one envisaged by international trading schemes. In fact, all the scientific evidence demonstrates that the marginal cost curve of GHG emission abatement is very steep, while the marginal benefit curve for reducing emission is very flat, thus showing the greater efficiency of price mechanisms in the climate context. From a practical standpoint, however, the international carbon tax is extremely difficult to implement, whereas the tradable system is easier, especially if the views of all interested parties are taken into account and consensus on the details of the scheme is reached.

²⁰ According to Aldy, Orszag and Stiglitz (2001) this criterion would generate other problems as well. The emission limit would not be binding on developing countries for a long time; the allocation scheme might foster population growth; it would give a large share of the permits to a very limited number of countries (38% to China and India); finally, it would not consider the circumstances of different countries.

²¹ I consider the account of justice as fairness put forward in the path-breaking book *A Theory of Justice* (1971). In 1999 Rawls, in his *The Law of Peoples*, presented a framework for international justice that extended his previous account of justice as fairness. The RTJF gives individual persons the task of producing different declinations of equality and liberty so that they can define alternative basic structures for their society. Instead, in *The Law of Peoples*, parties are peoples aiming to model liberty and equality among “liberal and decent peoples” (Beitz, 2000). The dimension of the climate debate is indeed supranational; nonetheless, I refer to the older, domestic, notion of justice as fairness because I deem it more appropriate as a morally acceptable referent for the design of an institutional order, be it at the national or the supranational level. It should be borne in mind that a climate mitigation strategy is primarily an institutional effort. On the other hand, the concept of justice as delineated in *The Law of Peoples* seems more appropriate to the morally acceptable rules that “liberal and decent peoples” should honour in order to protect their independence, and to maintain the equality and stability of liberal decent domestic national orders. In short, the reference is to the notion of justice as fairness because it is institutional and can furnish a flexible structure for any empirical context of application, whereas the notion put forward in *The Law of Peoples* is interactional and provides a general scheme of international rules (Pogge, 2004).

equal basic liberties, rights and duties, compatible with a similar system for all. The second—the difference principle—holds that inequalities are tolerable only if they satisfy two conditions. First, legitimate inequalities can characterize only situations open to all, under conditions of fair equality of opportunity. Second, inequalities must be to the greatest benefit of the least advantaged members of society. In short, “[a]n injustice is tolerable only when it is necessary to avoid an even greater injustice” (Rawls, 1971, p. 4). Each individual should be entitled to a certain minimum amount of basic goods and services, such as food, clothing, health, education, and income. I believe, however, that in current societies there is another fundamental basic need: energy, that is, the availability of energy services. The latter is in its turn influenced by ‘undeserved inequalities’ such as different climatic conditions, or a greater capacity to absorb GHG emissions because of larger forested areas,²² or other sinks. The uneven distribution of these characteristics prevents people from attaining genuine equality of opportunity, at least as far as the access to energy services is concerned, as stated by principle I of RTJF.

Hence, if the initial distribution of endowments is to be grounded on (principles I and II of) RTJF, it is necessary to develop an equity criterion that encompasses all the elements determining the actual flow of energy services. I call this the criterion of ‘differentiated equality’, which suggests that, according to the egalitarian principle, the benchmark must be an equal *per capita* distribution of endowments. On the basis of the difference principle, and of the “arbitrariness of natural contingency and social fortune” (Rawls, 1971, p. 96) that it encapsulates, this criterion should ultimately reduce undeserved inequalities.

In practical terms, the criterion of differentiated equality requires a rule that, by taking account of the level of economic activity as well,²³ is neutral in respect to, at least, the most strikingly untenable inequalities, such as those among energy needs due to heating and cooling necessities, and among the availability of sinks.²⁴

Turning to the SPCT, it is possible to envision an international tradable permits system among countries of the region. It requires parties to hold a permit (or allowance) for each unit of emission—a ton—that they release, and allows them to negotiate permits according to their marginal cost of abatement (i.e., those that can cut emissions at lower cost will do so in order to sell permits or to avoid buying more, and vice versa). Total emissions will therefore equal the number of permits, and only the most convenient reductions will be undertaken. An upstream programme seems more feasible, since it would apply only to fuel suppliers, which are easier to monitor. To facilitate the implementation, the permit system should start by covering only CO₂ emissions from fossil fuel combustion, while other types of climate-changing emissions might be included later. Furthermore, to prevent unexpectedly

²² To some extent, forest areas can also be seen as a ‘deserved’ inequality originating from deforestation practices, and which therefore derives from the will of emitting parties. Nonetheless, in the larger picture of ignorance about climate change, I deem it ‘undeserved’ because of the “ignorance of past generations about the consequences of their actions” (Grubb, 1995, p. 491).

²³ Consideration of the level of economic activity ensures that a society’s welfare is not penalized.

²⁴ I am aware that there are other ‘undeserved inequalities’ which should be included. For instance, the availability, and the consequent greater use, of renewables, which are indeed ‘undeserved’ resources, increases the possibility of using energy services, carbon emissions being equal. Unfortunately, at this stage, it is not possible to consider these elements owing to the lack of manageable data.

Table 1 CO₂ emissions (Thousands of metric tons, year 2000)

Australia	347,006
CI (Cook Islands)	29.3
FSM (Federated States of Micronesia)	141.4
Fiji	726
Kiribati	25.7
MI (Marshall Islands)	77.6
Nauru	135.7
NZ (New Zealand)	30,852
Niue	3.7
Palau	242
PNG (Papua New Guinea)	2,427.3
Samoa	139.3
SI (Solomon Islands)	165
Tonga	121
Tuvalu	4.7
Vanuatu	80.7
Tot CO ₂ emissions	382,177.4

Source:

UNFCCC—Greenhouse gases inventory database

high costs of permits, the framework should incorporate a safety valve²⁵ like the one proposed by Kopp, Morgenstern and Pizer (1997) and McKibbin and Wilcoxon (1997, 2002). Accordingly, it is possible to set an initial amount of carbon allowances equal to the 2000 level of CO₂ emissions in interested countries (Table 1).²⁶

In this system the initial allocable number of carbon permits in the South Pacific region thus amounts to 382,177,400. The ‘differentiated equality’ criterion suggests that these permits should be allocated according to a formula whose reference is the equal *per capita* distribution and which includes the standard of living (measurable by GDP) corrected for the most evident circumstances that influence the demand for energy services, and therefore the consequent GHG emissions of each country: climatic conditions (measurable, for instance, by heating and cooling degree days, that is, by the average temperature departure from a human comfort level of 18°C (65°F)), and the availability of carbon absorbing areas (proxied by the country’s forested area in thousand hectares). It is therefore possible to simulate different allocative scenarios based on different assumptions. Specifically, besides the reference scenario (the equal *per capita* one), I consider other scenarios where the focus is varyingly distributed according to the importance attributed to the different circumstances that shape the demand of energy services (Table 2).

The permits allocated to each country in every scenario of Table 3 are the weighted averages of the distributions of endowments according to the weights attributed to each circumstance that shapes the demand for energy services in Table 2.

The consequent permit trading differentials are illustrated in Table 4. The figures in this table are calculated for each country as the difference between the allocations envisaged by each scenario of Table 3 and the (hypothetical) allocations of each country based on their respective CO₂ current emissions in year 2000.

²⁵ The safety valve implies that as long as the price of allowances stays below a given threshold, emissions are limited to the number of allocated permits. Whereas when it exceeds the ceiling, additional permits are put on sale and emissions are allowed to rise in order to lower compliance costs.

²⁶ Note that 2000 CO₂ emissions are 15.63% and 22.10% higher than the limits set by the Kyoto Protocol, respectively, for Australia and New Zealand, the major regional emitters.

Table 2 Allocative scenarios

Scenario	Weights (%)			
	Population	GDP	HCN ^a	Forest area
1—Reference	100	–	–	–
2—Equal weight	25	25	25	25
3—Population	55	15	15	15
4—GDP	15	55	15	15
5—HCN ^a	15	15	55	15
6—Forest area	15	15	15	55

^a Heating and cooling needs

According to these figures, Australia, Nauru and Palau would be, on different scales, net buyers of allowances under every scenario, whereas all other countries in the region including New Zealand, the other major emitter, could variously rely on the flow of money derived from permit selling.

4 The SPCT: The Adaptation Side

As already pointed out, an effective climate agreement should not focus on mitigation alone. It should simultaneously rely on the other main climate strategy: adaptation, or the development of adaptive capacities for vulnerable natural and human systems in order to combat the physical effects of climate change and variability.

Within an international climate agreement, adaptation initiatives can be split into two domains: the financing of adaptation activities, and the allocation of raised resources. The former aspect concerns the division among countries of the costs of adaptation programmes and projects, and of residual damages compensation. The second issue concerns the allocation of the resources available for adaptation strategies among short-term activities such as disaster preparedness, long-term ones such as institutional, regulatory and anticipatory measures, and residual damages compensation. In fact, the greater vulnerability of developing countries and the

Table 3 Initial number of permits according to the different allocative scenarios

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Australia	241,164,951	280,228,249	264,602,930	300,986,901	267,325,002	287,998,163
CI	256,750	151,573	193,644	117,648	186,994	108,007
FSM	1,309,848	632,794	903,616	458,076	778,173	391,310
Fiji	10,668,126	5,509,978	7,573,237	3,871,906	6,656,664	3,938,105
Kiribati	1,220,749	614,366	856,919	384,026	826,182	390,336
MI	699,256	317,951	470,473	224,322	386,239	190,771
Nauru	155,128	68,227	102,987	52,234	76,750	40,936
NZ	48,368,489	40,235,698	43,488,814	41,837,947	45,311,655	30,304,376
Niue	26,111	17,848	21,153	13,311	21,565	15,362
Palau	242,411	179,834	204,865	177,742	201,684	135,047
PNG	65,644,157	47,164,173	54,556,167	29,486,147	52,581,588	52,032,791
Samoa	2,152,266	1,016,837	1,471,009	690,899	1,213,900	691,541
SI	6,341,443	4,078,499	4,983,676	2,562,816	4,353,468	4,414,033
Tonga	1,335,063	562,743	871,671	388,315	650,237	340,748
Tuvalu	138,887	72,879	99,282	52,287	96,221	43,728
Vanuatu	2,453,766	1,325,751	1,776,957	872,824	1,511,077	1,142,146

Table 4 Permit trading differentials [Buy(-)/Sell(+)] with respect to year 2000 current emission levels according to different allocative scenarios

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Australia	-105,841,049	-66,777,751	-82,403,070	-46,019,099	-79,680,998	-59,007,837
CI	227,450	122,273	164,344	88,348	157,694	78,707
FSM	1,168,448	491,394	762,216	316,676	636,773	249,910
Fiji	9,942,126	4,783,978	6,847,237	3,145,906	5,930,664	3,212,105
Kiribati	1,195,049	588,666	831,219	358,326	800,482	364,636
MI	621,656	240,351	392,873	146,722	308,639	113,171
Nauru	19,428	-67,473	-32,713	-83,466	-58,950	-94,764
NZ	17,516,489	9,383,698	12,636,814	10,985,947	14,459,655	-547,624
Niue	22,411	14,148	17,453	9,611	17,865	11,662
Palau	411	-62,166	-37,135	-64,258	-40,316	-106,953
PNG	63,216,857	44,736,873	52,128,867	27,058,847	50,154,288	49,605,491
Samoa	2,012,966	877,537	1,331,709	551,599	1,074,600	552,241
SI	6,176,443	3,913,499	4,818,676	2,397,816	4,188,468	4,249,033
Tonga	1,214,063	441,743	750,671	267,315	529,237	219,748
Tuvalu	134,187	68,179	94,582	47,587	91,521	39,028
Vanuatu	2,373,066	1,245,051	1,696,257	792,124	1,430,377	1,061,446

higher responsibility for GHG emissions of developed ones (Gardiner, 2004) make the financing of adaptation activities and the compensation for climate change damages major elements of disagreement in any possible climate treaty (Shukla, 1999). These issues should therefore be resolved on an ethical basis and put at centre stage in order to favour a fair and effective climate agreement.

4.1 Financing of Adaptation Activities

Historical principles of justice (Gardiner, 2004) demand that those who have contributed to the alteration of climate patterns should be held responsible: “Those societies whose activities have damaged the atmosphere ought, according to the first principle of equity²⁷, to bear sufficiently unequal burdens henceforth to correct the inequality they have imposed.” (Shue, 1999, p. 534). In order to quantify the responsibilities of countries for the amount of GHG remaining in the atmosphere, they should be held accountable for their cumulative past emissions. I accordingly assume that responsibility based on historical accountability is a sound basis on which to proceed. This enables the past emissions by polluters and their contributions to GHG concentration in the atmosphere to be correlated with climate change and its impacts. The atmosphere, with its capacity to absorb man-made emissions and to reduce climate change and its impacts, is a common resource, and the rights to it pertain to all actual and potential human beings in the world. All individuals should therefore be guaranteed just access to atmospheric absorptive services. In order for this right to be just for all parties, past emissions must be taken into account so that equality of opportunity is guaranteed to everybody, irrespective of where and when they happen, happened or will happen to live (Neumayer, 2000). Otherwise, ignoring historical accountability would be to act in favour of people who

²⁷ Shue’s principle of equity is broader than the traditional ecological ‘polluter pays principle’ because the latter is exclusively forward-looking (Shue, 1999).

lived in the past in heavy-emitter rich countries, and to discriminate against those now living in low-emitter developing countries, as well as against future generations.

Nonetheless, the share of absorptive capacity of the atmosphere consumed (given by the level of cumulative emissions) depends on various circumstances, such as the aforementioned climatic conditions and the availability of sinks. In general, it depends on circumstances that do not derive from the will of emitting parties. I therefore maintain that this situation should be grounded on a robust theory of justice with a “tendency to equality” (Rawls, 1971, p. 100), such as, again, the RTJF. In short, I consider the raising of adaptation resources from the same ethical perspective as the initial allocation of endowments, albeit referring in this case to a different basic need, namely atmospheric absorptive capacity. Although the two strategies are rooted in different general equity criteria—respectively, equality and historical responsibility—they on the one hand treat equals equally as required by principle I of RTJF, and on the other leave room for the wide discrepancies that characterize countries facing diverse climatic situations, as asserted by principle II of RTJF, by taking undeserved inequalities into account. In this sphere too, in fact, the unbalanced distribution of climatic traits hinders countries from achieving real equalities of opportunity in accessing the atmosphere’s absorptive capacity. Hence, grounding the financing of adaptation activities on (principles I and II of) RTJF requires a specific equity criterion, which encompasses these considerations for determining the use of atmospheric absorptive capacity. This I call the criterion of ‘differentiated historical responsibility’. This suggests that, according to the Rawlsian egalitarian principle, the yardstick must be responsibility based on historical accountability, whereas the difference principle requires consideration of undeserved inequalities that actually influenced cumulative GHG emissions and contributed to their total amount.

In policy terms, the financing of adaptation activities can be quite straightforward. It should envision, I submit, the creation of a fund financing adaptation to climate change similar in its aim to the Adaptation Fund under the Kyoto Protocol, whose mechanisms for disbursement have been agreed at COP 7. This fund would in principle be financed by countries according to the criterion of differentiated historical responsibility: each party rivals the others in its use of the atmosphere’s absorptive capacity, for the atmosphere is a common resource, with a finite capacity and characterized by difficulty of exclusion. The amount of each single contribution to the fund would therefore be calculated in proportion to cumulative emissions, net of undeserved inequalities, such as those deriving from dissimilar heating and cooling needs, and differing availabilities of sinks. The SPCT should therefore rely on an adaptation activities fund, whose resources can be focused in the South Pacific region mainly on combating land degradation and deforestation and which should be implemented by specific national and regional agencies. The contribution to the fund is proportional to cumulative emissions weighted (i.e., multiplied) for heating and cooling needs (in degree days), the proxy for climatic conditions; and forest area, the proxy for the availability of sinks. These two undeserved²⁸ inequalities are therefore the weights that correct historical responsibility, as measured by cumulative emissions, in order to encompass the essence of principle II of the RTJF (Table 5).

Not surprisingly, the main contributors to this fund are the largest regional countries, Australia and New Zealand. These countries, especially Australia, are

²⁸ See footnotes 22 and 24.

Table 5 Adaptation activities fund: contribution quotas

	Cumulative emissions ^a	Weights ^b	Contribution to the fund (%)
Australia	3,952,761.1	33,506.7	81.186
CI (Cook Islands)	412.0	246,849.2	0.062
FSM (Federated States of Micronesia)	2,250.0	69,660.0	0.096
Fiji	11,606.8	115,737.0	0.823
Kiribati	418.0	146,602.8	0.038
MI (Marshall Islands)	1,300.0	3,399.0	0.003
Nauru	2,022.0	3,599.0	0.004
NZ (New Zealand)	378,150.2	5,2687.8	12.213
Niue	60.0	58,619.4	0.002
Palau	3,172.0	262,350.0	0.510
PNG (Papua New Guinea)	33,580.0	222,201.2	4.574
Samoa	1,676.0	121,360.0	0.125
SI (Solomon Islands)	2,098.0	274,658.4	0.353
Tonga	1,068.0	12,264.0	0.008
Tuvalu	80.0	3,653.0	0.000
Vanuatu	1,072.0	93,438.2	0.002

Source: ^a Cumulative CO₂ emissions 1970–2000 (thousand metric ton of CO₂) from: fossil, solid, liquid, gas fuel consumption, cement production, gas flaring, calculations on CDIAC 2006 (Internet: <http://cdiac.esd.ornl.gov/ftp/ndp030/CSV-FILES/>. Accessed 20 June 2006)

^b Heating and cooling needs (calculations on World Resources Institute—Climate Analysis Indicators Tool, Internet: <http://cait.wri.org/>. Accessed 20 June 2006) and Forest area (elaboration from FAO Forest cover 2000, Internet: www.fao.org/forestry/site/country-info/en. Accessed 20 June 2006)

held responsible in the South Pacific for the harm caused by climate change, chiefly to low-lying island states. The Prime Minister of Tuvalu has declared, for instance, that his country intends to sue Australia for climate impacts that it may suffer.²⁹

4.2 Allocation of Adaptation Resources

A straightforward benchmark for the allocation of adaptation resources would relate to the notion of vulnerability as defined by the IPCC: “the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change” (IPCC, 2001b, p. 6). Unfortunately, this notion of vulnerability cannot give any information on the ability of the parties to implement proper adaptive strategies. Therefore, vulnerability alone cannot, in my opinion, be a conclusive referent for the allocation of adaptation resources. It is once again necessary to turn to justice principles and equity criteria to define the basis for a possibly more widely agreed-to allocation scheme for adaptation funds that includes considerations on the ability of countries to use adaptation resources effectively.

Amartya Sen’s capability approach (SCA) seems promising from this perspective. This framework requires “a broader informational base, focusing particularly on people’s possibility to choose the life they have reason to value” (Sen, 1999, p. 63), highlighting the social and economic factors which give people the opportunity to do and to be what they consider valuable.

Thus, the SCA concentrates directly on the substantive freedoms of individuals. Sen suggests that well-being should be considered in terms of functionings and

²⁹ Internet: <http://news.bbc.co.uk/1/hi/world/asia-pacific/1854118.stm> (accessed 20 June 2006).

capabilities. Functionings relate to what a person may value doing or being; they are the living conditions achieved by an individual and represent a set of interrelated activities and states ('doings' and 'beings') forming his/her life. Capabilities concern the ability of an individual to achieve different combinations of functionings and define the freedom to choose the life that s/he prefers. In order to use the SCA as a justice reference in the climate debate, it is necessary to halt at the level of the chosen vector of functionings as the proper space for measuring climate harms.³⁰

The Senian approach is particularly useful in allocating adaptation resources because the essence of any effective adaptive response is not solely the availability of goods and services, or analysis of the outcomes of adaptation actions according to the yardstick of personal utility. Rather, it is the possibility of gaining effective protection against climate impacts from adaptation resources. This evaluative space is the *locus* where, in my opinion, the allocation of adaptation resources can be most fruitfully read. By contrast, as far as the financing of adaptation to climate impacts is concerned, no ability is required to consume the atmosphere, so that the focus is entirely on the just availability of the primary service 'atmospheric capacity'. Yet concentration on mere resources, be they primary goods or otherwise, as in the RTJF, suffers from the "fetishist handicap" (Sen, 1979: p. 218) in the allocation of adaptation funds, because it is not concerned with what these goods "do to human beings" (Sen, 1979: p. 218). In other words, the "focal personal features" (Sen, 1990, p. 112) of the SCA are substantive freedoms, while those of the RTJF are primary goods and services. According to Sen, in fact, the ability to convert these primary goods into freedoms varies for individual, social, institutional reasons. Consequently, equality of primary goods may produce marked inequalities in the level of enjoyed freedoms. Moreover, the beneficiaries of adaptation resources are mostly the developing countries, by and large characterized by lower social and institutional abilities to turn primary goods (resources) into freedoms, i.e., into valuable beings and doings. Primary goods are therefore only means to achieve freedoms, which are the real ends of development. It is for this reason that I prefer to root the allocation of funds in the notion of functionings (ends), rather than in the notion related to goods and services (means). Turning adaptation resources into a proper adaptive strategy requires a great deal of possibilities and abilities, and the SCA is the framework that explicitly includes these aspects.³¹

The Senian notion of well-being concerns the enlargement of individuals' substantive freedoms: capabilities. In general, adaptation resources should thus be allocated with regard to the level of some suitably selected capabilities. In practical terms, since capabilities are too 'slippery' to be quantified, the focus is on achieved functioning: the lower the overall level of some achieved functionings, the more adaptation funds are due.

³⁰ Sen himself suggests that at a practical level the most appropriate focus of attention may not always be the measurement of capabilities: "Some capabilities are harder to measure than others and attempts to putting them on a 'metric' may sometimes hide more than they reveal" (Sen, 1999, p. 81).

³¹ I believe that this approach might also be useful for the operationalization, using a proper criterion of equity, of the notion of 'social vulnerability' (Adger, 1999; Adger & Kelly, 1999; Brooks, 2003; Brooks, Adger, & Kelly, 2005; Kelly & Adger, 2000), defined as a state of well-being pertaining directly to individuals and social groups, whose causes are related to social, institutional, and economic factors as well as to climate impacts. The SCA in fact explicitly considers the possibility of gaining effective protection against climate impacts from adaptation resources, as demanded by social vulnerability.

Table 6 Adaptation fund: participation quotas according to the capability approach

	Population ^a	1-HDI ^b	Participation in the fund (%)
FSM	108,155	0.431	0.99
Fiji	880,874	0.333	6.24
Kiribati	100,798	0.485	1.04
MI	57,738	0.437	0.54
Nauru	12,809	0.337	0.09
Niue	2,156	0.226	0.01
PNG	5,420,280	0.686	79.12
Samoa	177,714	0.410	1.55
SI	523,617	0.629	7.01
Tonga	110,237	0.353	0.83
Tuvalu	11,468	0.417	0.10
Vanuatu	202,609	0.575	2.48

Source: ^a Various Statistical Offices; ^b Annex 4, Human Development Indicators, UNDP Pacific Human Development Report, 1999.

The criterion of equity springing from the framework of social justice put forward by the SCA, which in my opinion is more appropriate in the climate debate, is based on the concept of human development.³² This criterion I call ‘lack of functionings’. Specifically, the lower the degree of human development as measured by some properly selected functionings, the higher the access to adaptation resources should be.

From this perspective, the SPCT should allow participation in the adaptation fund only to countries in the South Pacific region with medium and low levels of human development (HDI < 0.8 as defined by the UNDP). Therefore, countries with high levels of HDI (>0.8: Australia, Cook Islands, New Zealand and Palau) would not be entitled to adaptation resources.

It is possible in practice to refer to the UNDP HDI, which is a summary measure of human development obtained by averaging the indices of three basic functionings.³³ The difference between the HDI value achieved by a country and one measure its lack of functionings. Therefore, the wider this difference, the lower the ability to deal with climate-related impacts and, according to a human development-based leximin rule (Kolm, 1996, p. 59), the greater should be the share of raised funds proportionally to the population. The quotas of participation in the fund by the recipient countries (HDI < 0.8) are calculated in Table 6.

The participation quotas reward to a greater extent countries with low levels of human development in order to fill the void left by the lack of institutional, social and economic capacities, and to encourage the improvement of these kinds of capacities through the development of a form of social capital deliberately intended to change the balance of decision-making power (Pelling & High, 2005), so that new institutional arrangements arise to turn resources into freedoms, i.e., into adaptive

³² The notion of human development closely resembles the notion of human security, which is of great importance in the climate debate, given that climate change is and will be a human security issue (Sindico, 2005). Human security can in fact be defined by a set of basic capabilities (achievable functionings, in practice) which is more parsimonious than that defined by the broader concept of human development (Alkire, 2002).

³³ These are: ‘being able to live a long and healthy life’, ‘being able to have an adequate level of knowledge’, and ‘being able to have a decent standard of living’. With the normalization of the indices, the HDI ranges from 0 to 1, where 1 is the maximum possible value. Despite its apparent simplicity and its somehow crude use of the notion of functionings, the HDI has had a notable impact on policy-making, and it is still the best-known operationalization of the capability approach.

strategies. This is exactly the spirit of the capability approach. Accordingly, the ultimate goal of an adaptation scheme should be enhancement of the opportunities available to poorer harmed countries to deal with adverse climate impacts.

5 Concluding Remarks

The Kyoto Protocol is not the only possible institutional response to climate change. It is a partial agreement, a first step, which can be strengthened and supplemented by regional schemes in forthcoming commitment periods. A regional agreement can coexist with a global one, and indeed should do so because no regional approach on its own can successfully address global climate change. However, to highlight the possibility of a coexistence of the SPCT with a global agreement like Kyoto, it is necessary to distinguish between mitigation and adaptation domains. On the mitigation side the coexistence seems straightforward, since international tradable permits schemes like the SPCT³⁴ are compatible with Kyoto (Bodansky, 2002), for they would strengthen its emission targets, without undermining its effectiveness, by providing additional actions on a regional scale with which to limit emissions. Moreover, the SPCT could also be easily extended to similar agreements around the world, or include other like-minded countries. Finally, since poorer countries of the region would be stimulated to enter the SPCT because of the financial flows deriving from permit selling, the parties involved in mitigation in the South Pacific should eventually increase.

Adaptation entails different considerations. A regional framework for financing adaptation would be feasible, I believe, only under the following simultaneous conditions: (a) the physical vulnerability of the region is high, and consequently it is possible to envision a process of ‘bounding’³⁵ (Newman, 2003) which establishes a ‘community of place’ (Pelling and High, 2005); and b) within this community development, physical vulnerability and the means to deal with it are unevenly allocated. The SPCT fulfils both these conditions: the sharing of the same likely climate impacts and of similar physical vulnerabilities (African Development Bank, 2003) facilitates a mutual closeness among countries of the region which might be the foundation for the emergence of a regional community of place. At the same time, there are ‘polluters’ and ‘victims’ heterogeneous in their levels of development and adaptive capacity. The ‘regionalization’ of adaptation makes, in my opinion, its financing much easier. It is in fact still highly politically unpopular for developed countries’ governments to allocate part of their taxpayers’ money to financing climate-related issues in remote areas: it would be more viable to support states within the same community in their struggle against climate change. Ultimately, the coexistence of the SPCT with a global agreement would instead require the donor countries to finance adaptation activities only on a regional scale,³⁶ so that the adaptation needs of recipient countries are satisfied solely through the SPCT.

³⁴ The SPCT relies, on the mitigation side, on a tradable permits system, which differs from other likely architectures only in the initial allocation of endowments.

³⁵ The process of bounding requires that states share a relevant characteristic(s) which leads to definition of a ‘community’ irrespectively of national boundaries.

³⁶ I do not refer to other voluntary funding initiatives, such as the ones involving development assistance, which might be indeed be carried out on a global scale.

The South Pacific is faced by a highly unjust situation. The Pacific Island countries will bear a disproportionate burden of the impacts of climate change, but they are responsible for a trifling amount of GHG emissions, whereas the major regional emitters can by and large safely cope with climate change. A comprehensive regional climate agreement, encompassing the perception of climate change of the Pacific Islands as primarily affecting national and human security, and articulated, besides mitigation, in stronger adaptation and residual damages compensation initiatives is more likely to succeed; and especially so if it is properly underpinned by principles of justice and criteria of equity that may also stimulate a regional debate aimed at consensus building. Such a climate agreement, especially if it directly engages the main regional stakeholders in participatory processes, would enable the parties involved, with their somewhat divergent interests, to conceive more coherent responses to climate change based on common views and greater mutual trust.

On the mitigation side it is therefore possible to envision an international tradable permits system similar to the one proposed by the Kyoto Protocol, which requires the parties to hold endowments for each unit of emission that they release, and allows them to negotiate endowments according to their marginal costs of abatement. The criterion of ‘differentiated equality’ grounded in the RTJF suggests that endowments should be distributed according to a formula whose reference is the equal *per capita* distribution and which includes the standard of living, corrected for the most evident circumstances that influence the demand for energy services of each country: climatic conditions and the availability of carbon absorbing areas. According to the data in Tables 3 and 4, Australia is, as expected, the largest net buyer of allowances in every scenario, whereas other parties variously rely on the resources deriving from permit selling.

The equity criteria of ‘differentiated historical responsibility’ and of lack of functionings may prove to be a useful basis for adaptation strategies. In regard to the just financing of adaptation activities, the criterion of ‘differentiated historical responsibility, backed by the RTJF, requires a rule that takes account of the actual consumption of atmospheric capacity. As far as the SPCT is concerned, the financing of adaptation activities should envision the creation of a fund where the amount of each single contribution is calculated in proportion to cumulative emissions, net of undeserved inequalities, such as those deriving from dissimilar heating and cooling needs, and differing availabilities of sinks. Australia and New Zealand are obviously the main contributors to the fund. They are held responsible in the South Pacific for the harm caused by climate change, chiefly to low-lying island states. This concerns Australia especially, because it has the highest per capita GHG emission rate in the world, about 26.7 tonnes per person, twice the average level of other wealthy countries (13.4 tonnes), and with only 19 million people producing 1.4% of global carbon emissions.

Adaptation resources should be allocated to all eligible parties in proportion to their levels of human development: the lower the overall level, the more adaptation funds are due. This perspective is rooted in the SCA and gives rise to a criterion of equity that I call ‘lack of functionings’. Specifically, the lower the degree of human development as measured by some appropriately selected functionings, the higher the access to adaptation resources should be. From this standpoint, the SPCT should allow participation in the adaptation fund only to countries with medium and low levels of human development, while countries with high levels of HDI would not be entitled to adaptation resources. Therefore the lower the HDI, the lower the ability

to deal with climate-related damages and the greater should be the share of damage compensation, proportionally to the population. Participation in the adaptation fund is greater for countries with low levels of human development.

Acknowledgments I thank the Faculty and Staff of the Graduate School of the Environment, Macquarie University, Sydney for the precious suggestions and help that they gave me during my visit to the School. I thank two anonymous referees for their stimulating and helpful comments.

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