Submission of the Institute for Agriculture and Trade Policy to the UNFCCC on issues related to agriculture for consideration by the SBSTA in the context of Article 4.1(c) on cooperative sectoral approaches and sector-specific actions

5 March 2012

The COP, in its decision 2/CP.17, requested the SBSTA to consider issues related to agriculture at its 36th session, in the context of deliberations on ***Cooperative sectoral approaches and sector-specific actions, in order to enhance the implementation of Article 4, paragraph 1(c), of the Convention.***

The COP invited Parties and admitted observer organizations to submit their views on these issues related to agriculture in advance of the upcoming SBSTA. The Institute for Agriculture and Trade Policy welcomes the opportunity to share our views below.

I. In ongoing negotiations on *cooperative sectoral approaches and sector-specific actions* under item 1(b)(iv) of the Bali Action Plan, many countries had emphasized the need for a general framework under which to consider such actions. That framework included many important principles which should continue to guide consideration of sector-specific actions in agriculture, including:

- consistency with the provisions and principles of the Convention, in particular the principle of equity, common but differentiated responsibilities, and Article 4.7;
- historical responsibility for emissions in the sector;
- that food security is important and should not be compromised by sectoral approaches and sector-specific actions;
- that cooperative sectoral approaches and sector specific actions shall not limit the ability of developing country Parties to pursue economic and social development and poverty eradication;
- the importance of promoting and enhancing cooperative action on the development and transfer of environmentally sound technologies;
- and that cooperative sectoral approaches and sector-specific actions shall not lead to new commitments for developing country Parties, nor create disguised protectionism in the name of climate change mitigation, in particular for the exports of developing country Parties.

II. Taking into account the principle of common but differentiated responsibilities, mitigation efforts in agriculture, including cooperative sectoral approaches and sector-specific actions, should be concentrated **in Annex I countries with high *per capita* emissions from agriculture**. Developed country agricultural production contributes significantly more emissions *per capita* than developing country agriculture. In particular, in the case of methane and nitrous oxide emissions from animal manure, industrial systems emit over half of the world's total, while developed countries account for less than 20 percent of the global population. Significant emission reductions are necessary from the industrial agricultural systems of Annex I countries.

Annex I countries, totaling 17 percent of the world population, are responsible for 26 percent of global N_2O emissions from soils, 30 percent of CH_4 emissions from enteric fermentation, and 52

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percent of CH_4 and N_2O emissions from manure management,[1] the last category being disproportionately high due to the use of lagoons for manure management in large-scale confinement operations.[2] Globally, New Zealand, Ireland and Australia ranked as the top three emitters for per capita agriculture production in 2005, while the OECD outpaced the entire world.[3]

According to the IPCC, these emissions increased by nearly 17 percent between 1990 and 2005.[4] Agriculture emissions from North America increased by 18 percent and from OECD Pacific by 21 percent. Increases were attributed to a massive increase in nitrogen fertilizer use in New Zealand and Australia and manure effluent of cattle, poultry and swine farms and manure application to soils in North America. Annexes I and II show emission trends in methane and nitrous oxide emissions in OECD countries in the period between 1990-2009.

In terms of agriculture-related methane, Annex I shows that only the European Union has significantly reduced its emissions during the time period. Australia has reduced slightly from its 1990 levels, while Canada, New Zealand and the United States have increased their methane emissions between 1990-2009. Apart from the EU (which has decreased its emissions), Australia, Canada and New Zealand have all significantly increased their nitrous oxide emissions above 1990 levels in the period between 1990-2009. The US levels have remained high from 1990 and increased since. The largest consumption of fertilizer per capita (the main source of agricultural N_2O emissions) continues in Annex I countries (see table 1). New Zealand, Australia, Canada and the United States all exceed the world average of per capita fertilizer consumption.

These trends are unfortunately contrary to most recent prescriptions of where emission reductions in agriculture must come from.[5] For example, the UNEP emissions gap report cites Golub *et al.* (2009)[6], who demonstrate that the bulk of the mitigation potential in agriculture resides in significant reductions in fertilizer use in the US, as well as in ruminant production globally.

Though the IPCC estimated that agriculture emissions will continue to increase from the developing world, the percentage of people in agriculture in the developing world, particularly Asia and Africa, far exceeds its counterparts in Annex I countries (see table 1). According to FAO statistics, 40% of the world's population is in agriculture. The large majority of this population resides in and is responsible for the food security of these countries, particularly as dependence on global trade for food becomes particularly unpredictable with rising food prices and erratic supply.

Much more is at stake for developing countries in constraining emissions growth from agriculture given their dependence on their agriculture sector for livelihoods, food security and overall development, particularly where a large percentage of the country's GDP comes from agriculture exports and where low yields currently will necessitate an increase in use of fertilizers. Control of agricultural emissions from developing countries should be enabled through the transfer of ethically, environmentally sound and cost-effective technologies and practices.

TABLE 1. PER CAPITA FERTILISER CONSUMPTION OF COUNTRIES				
COUNTRIES		PER CAPITA CONSUMPTION 2008 IN TONNES		POPULATION IN AGRICULTURE IN %
WORLD		0.02397		40
US		0.05639		2
CANADA		0.07721		2
FRANCE		0.04301		2
GERMANY		0.02327		2
UK		0.02034		2
AUSTRALIA		0.07072		4
NEW ZEALAND		0.18431		8
ARGENTINA		0.03113		8
BRAZIL		0.05266		12
CHINA		0.03780		62
INDIA		0.01911		55
PHILIPPINES		0.00769		35
THAILAND		0.02952		50
KENYA		0.00455		71
Data sourced from : FAO Statistical Yearbook 2010 accessed at: http://www.fao.org/docrep/015/am081m/PDF/am081m00a.pdf				

Annex I countries can and must lead and demonstrate in the next decade that a dramatic shift can be made in changing their production and consumption practices from the current unsustainable agroindustrial model they have helped to create towards a more ecological and just system that can at the same time address food security.

III. To accomplish these emission reductions in keeping with the principle of common but differentiated responsibilities, **targets** for reduction in emissions of both methane and nitrous oxide could be considered for **Annex I countries**. Targets could also be set for increase in acreage under organic and other agroecological production methods.

Annex I countries can lead by adopting targets for reducing emissions through reductions in the application of synthetic fertilizer and a measureable shift away from industrial monocropping systems towards increased acreage under organic methods that increase yields and biodiversity, linked with the adoption of agriculture policies that support and incentivize agroecology.

Targets also can be set for reductions in agricultural CH_4 emissions from animal sources in Annex I countries, which could be achieved through a shift away from industrial meat production from highly polluting concentrated animal feeding operations (CAFOs). Such a shift away from ecologically destructive industrial farming of animals would necessarily bring with it the co-benefit of establishing more ethical and ecological ways of rearing animals.

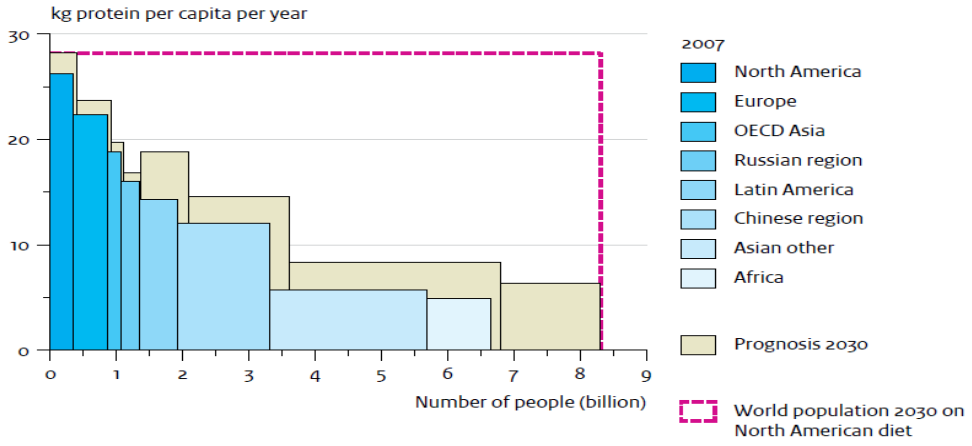
These targets should be linked with a timetable for this shift within the second commitment period of the Kyoto Protocol.

IV. Consumption in Annex I countries is an important driver of emissions, domestically and embodied in imports, particularly those emissions deriving from manure management in large-scale animal confinement operations.

While much is made of rising meat demand in developing countries, data on meat consumption indicates the large discrepancy in per capita meat consumption between Annex I and non-Annex I

countries (see graph below). Moreover, historical overconsumption patterns of Annex I countries are completely ignored in such discussions. It is well documented that North Americans consume the most amount of meat per capita in the world. However, European meat consumption is also significant, and increased by 50% between the period 1961-2007.

Global intake of animal protein per region



Source: Based on FAO (2006, 2010)

The increase in European meat consumption seems incongruent with decreasing agricultural emissions in Europe. In fact, while European agriculture production emissions may be going down on European soil, European meat consumption/demand is contributing to agriculture emissions elsewhere. According to the PBL Netherlands Environment Assessment Agency, around 12 million hectares of land outside of Europe is attributed to European livestock production,[7] for example, through the import of animal feed from Latin America. While acknowledging overconsumption in North America, Europe and Oceania combined, the FAO World Livestock report from 2011 suggests that there is no alternative but to further intensify livestock operations to meet increased meat consumption of 73 percent by 2050 and 58 percent for dairy. Overconsumption and what Annex I countries can do about it remains unaddressed.

Trade liberalization, the dismantling of public support for agriculture and other factors conspired to push food and agriculture prices downward through the 1990s and early 2000s, in many cases below the cost of production, resulting in overproduction and export dumping. Recent rounds of food price volatility have raised prices but for the most part have benefitted the largest producers, traders and corporations, while continuing to undermine small-scale producers and consumers, especially in developing countries. The role of oligopoly power in the food and agriculture sector as drivers of agriculture emissions through incentivizing the conversion of low emissions ecological and biodiverse agriculture into high-input industrialized agriculture systems could be considered by the SBSTA in its review of issues in agriculture.

Annex I food retail firms such Walmart, Tesco and Carrefour have created demand for cheap food and agriculture commodities and processed foods and expectations that food can be delivered cheaply to consumers, distorting the actual cost of production and externalizing environmental costs, including carbon emissions from land conversion to high input agriculture, to reach economies of scale to meet their demand targets. These retail firms are now seeking markets in developing countries. Their demand (buyer power) will further lead to downward pressure in producer prices in these countries and a forced conversion of small landholdings into consolidated, high input agriculture systems to reach economies of scale. Moreover, their expansion is creating more export-led emissions of processed foods from Annex I countries to markets elsewhere. The impact on

emissions as a result of these processes can be assessed within the context of the agriculture discussions at the UNFCCC.

For instance, an examination of international rules could be done with a view to analyzing which elements of international trade and investment policies on agriculture, intellectual property and services lead to perverse incentives in agriculture to convert low-emissions ecological biodiverse agriculture into high-input industrialized agriculture. For instance, what impact does the liberalization of distribution services have on lengthening food supply chains through the creation and consolidation of global monopolies in food retail. What impact does this have on local supply chains of developing countries?

Annex I countries can establish targets on domestic consumption and put in place an action plan that helps promote healthy levels and quality of animal protein which in turn reduces demand for livestock products in Annex I countries. They can help shape health policies and public welfare messages that inform their citizens about maximum daily nutritional intake of various foods, including animal protein, for healthy lifestyles and raise awareness about the environmental, climatic and health costs of consuming in excess. Public procurement policies regarding consumption of animal protein can also help address overconsumption of animal and dairy products.

This may, over time, affect exports of animal protein and animal feed to Annex I countries, but need not impact trade of developing countries, particularly if meat consumption increases in other developing countries and if a shift from industrial practices to more ecological approaches can result in more diverse incomes from agriculture than single commodity exports or exports of animal protein. Moreover, a shift to more integrated, biodiverse and local systems of food production will enable countries to become less export dependent for their development.

V. To understand and begin to address those policies and practices which are responsible for significant emissions from the agriculture sector, or which could lead to significant emission reductions, Parties could consider a SBSTA review of:

- national policies and practices that contribute to high agriculture sector emissions, from **Annex I countries**, such as policies that encourage the production and overuse of synthetic fertilizers, or those that encourage overproduction, overconsumption and industrialization of animal products, as well as appropriate measures to incentivize changes in production methods;
- national policies and international funding for research on and implementation of ecological agricultural practices that reduce or prevent agricultural GHG emissions, such as practices that reduce or eliminate the use of synthetic N fertilizers;
- current research on steps to localize food production and shortening food supply chains as a means to reduce the contribution of transport and processing emissions related to food production and consumption;
- international and national policies and practices which influence **demand in Annex I countries**, leading to the conversion of low-emissions ecological, biodiverse agriculture into high-input industrialized agriculture systems and thus to increased agriculture emissions.

VI. The SBSTA should undertake an institutional capacity analysis to assess what various intergovernmental organizations and Parties are doing with respect to agriculture and in order to assess the appropriate role for the UNFCCC in "the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions."

Numerous intergovernmental organizations have ongoing programmatic work on mitigation in agriculture, led by the UN FAO and the CGIAR research centers. The IGO work appears to be geared towards developing countries, and in particular small farmers, while there seems to be a dearth in international efforts to address mitigation of harmful industrial agriculture practices, in particular in Annex I countries.

Several national and international efforts should be highlighted here:

- the Global Research Alliance on Agricultural Greenhouse Gases, which coordinates research and technical cooperation on agricultural GHG mitigation;
- the US Consortium for Agricultural Soil Mitigation of Greenhouse Gases (CASMGS), a partnership of nine US universities and one national laboratory, funded by the US Department of Agriculture, to provide the information and technology necessary to develop, analyze and implement carbon sequestration strategies; and
- the CGIAR Research Programme on Climate Change, Agriculture and Food Security.

This work should not be duplicated by the UNFCCC.

VII. Soil carbon sequestration is not a reliable strategy for mitigation in agriculture, although much hope has been placed on its potential, including by the IPCC.[8] Scientific studies conducted since the publication of AR4 strongly indicate that many of the recommended practices, such as reduced tillage, do not in fact increase soil carbon content, but merely prevent more carbon from escaping soils.[9] Estimates provided so far for mitigation potential are far in excess of feasibility, particularly when taking into consideration uncertainties associated with biological processes.

Increasing concentrations of soil carbon are complex undertakings that require increasing inputs of carbon such as manure and compost. These practices must be maintained yearly. Any change in practices can lead to reversal, as could an increase in average temperatures due to global warming. Moreover, as precipitation patterns change, along with soil moisture profiles, the sequestration potential for any given soil type or agricultural ecosystem will likely diminish. For example, an increase in soil moisture will likely increase soil emissions of nitrous oxide and methane, leading to an actual increase in greenhouse gas emissions from soils, rather than sequestration.

Mitigation efforts in agriculture should focus on the main emissions from the sector. As noted earlier, methane and nitrous oxide, rather than carbon dioxide, are the most important GHGs emitted in the agriculture sector. Moreover, agriculture emissions of these non-CO_2 gases are responsible for the bulk of the global emissions of these gases. Methane emissions from agriculture account for 50 percent of total global methane emissions; nitrous oxide emissions from agriculture account for 75 percent of the global total.[10] Attention to mitigation of these gases in the agriculture sector is urgent.

Conclusion

There have been suggestions to launch a work programme on agriculture under article 4.1 (c), with some consideration of adaptation issues as well. However, the Durban outcome on cross-sectoral approaches does not ask Parties to decide whether to launch a work programme on agriculture, and given an overloaded negotiating agenda, there seems no clear need to increase this burden with a SBSTA work programme. Moreover, given the urgent need for building resilience and facilitating adaptation in the agriculture sector, this should be where UNFCCC and SBSTA resources are prioritized.

The SBSTA, at this stage, should limit itself to reviewing and assessing the areas of discussion outlined in this submission, given the dearth of attention to these critical sources of global

agriculture emissions and need for urgent and substantial reduction of emissions of agricultural non-CO_2 emissions. A new work program on agriculture that conflates necessary mitigation of industrial agriculture with the adaptation needs of small farmers will not only be unjust and scientifically unsound, but also critically distract from addressing either issue comprehensively.

The SBSTA currently has the opportunity to consider agriculture and adaptation within the Nairobi work programme on impacts, vulnerability and adaptation (NWP), and Parties should decide to include agriculture as a specific workstream for the next phase of the NWP. In addition, efforts should now be made to systematically address agriculture adaptation within other components of the Adaptation Framework, including the work program on loss and damage. A next step would be for Parties to direct the Adaptation Committee to coordinate specific sectoral workstreams with work undertaken under each of the elements of the Adaptation Framework, with agriculture as one of the sectoral areas identified for such a workstream.

Respectfully submitted by Shefali Sharma and Dr. Doreen Stabinsky on behalf of the Institute for Agriculture and Trade Policy (IATP)

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[1] P. Smith et al. 2007. Policy and technological constraints to implementation of greenhouse gas mitigation options in agriculture. *Agriculture, Ecosystems and Environment* 118: 6-28.

[2] "Liquid manure management systems, such as lagoons, ponds, tanks, or pits, handle a much smaller portion of total manure but comprise 80 percent of total methane emissions from manure."
http://uspowerpartners.org/Topics/SECTION6Topic-AnimalWasteMethane.htm

[3] http://www.garnautreview.org.au/pdf/Garnaut_Chapter7.pdf

[4] http://www.ipcc.ch/publications_and_data/ar4/wg3/en/ch8s8-es.html

[5] UNEP. 2011. Bridging the emissions gap. United Nations Environment Programme (UNEP).

[6] Golub, A., T. Hertel, H.-L. Lee, S. Rose, and B. Sohngen. 2009. The opportunity cost of land use and the global potential for greenhouse gase mitigation in agriculture and forestry. *Resource and Energy Economics* 31(4): 299-319.

[7] Westhoek et al. 2011. The protein puzzle: the consumption and production of meat, dairy and fish in the European Union. PBL Netherlands Environment Assessment Agency.

[8] Smith et al. (2007), op cit.

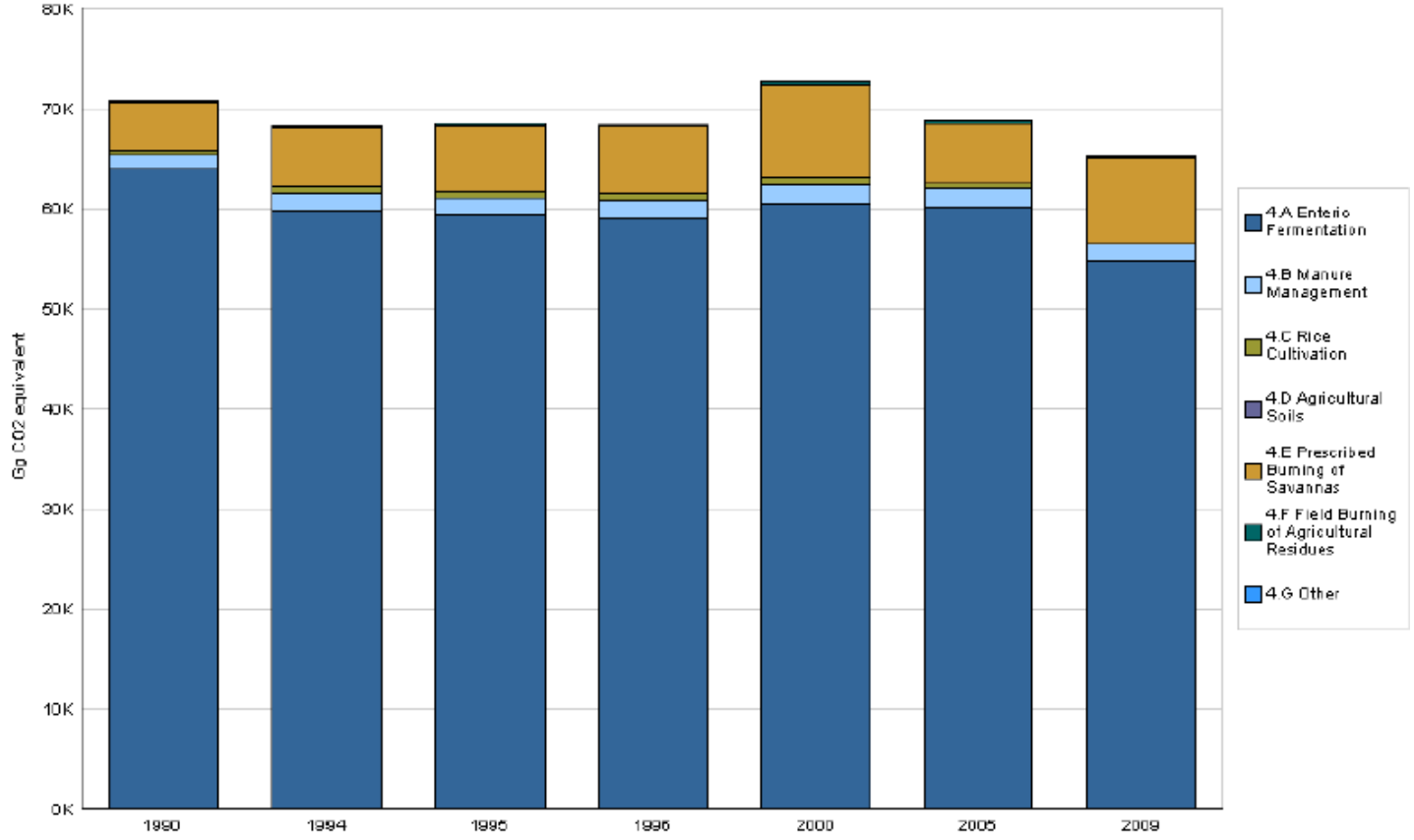
[9] DeGryze el al. 2009. Modeling shows that alternative soil management can decrease greenhouse gas emissions. California Agriculture 63(2): 84-90.

[10] Golub et al. (2009), op cit.

Agricultural Methane Emissions as reported by some Annex 1 countries (Source: UNFCCC Data Interface)

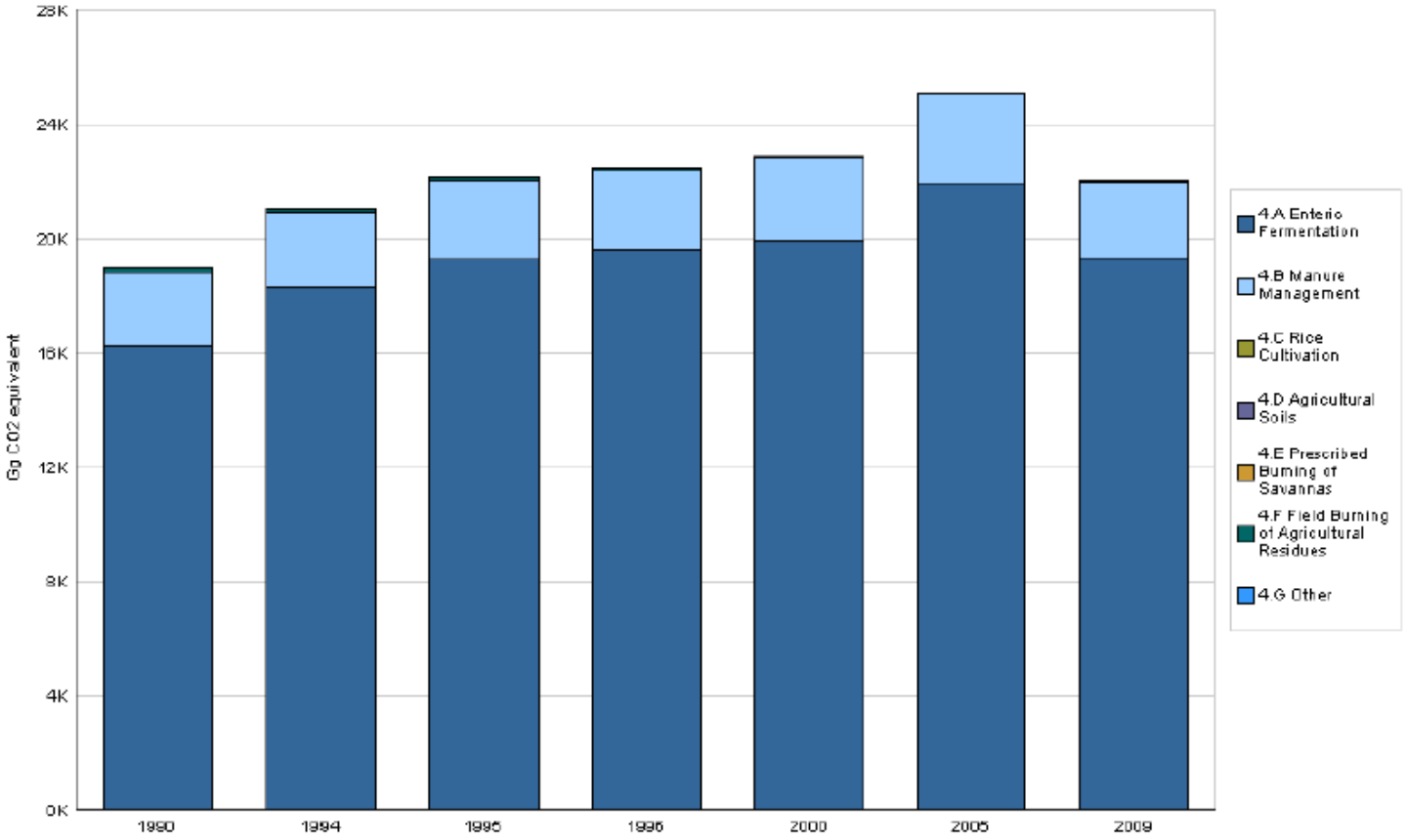
Annual greenhouse gas (GHG) emissions for Australia

Query results for Party: Australia - Years: 1990, 1994, 1995, 1996, 2000, 2005 and last year - Category: 4 - Agriculture - Gas: CH4



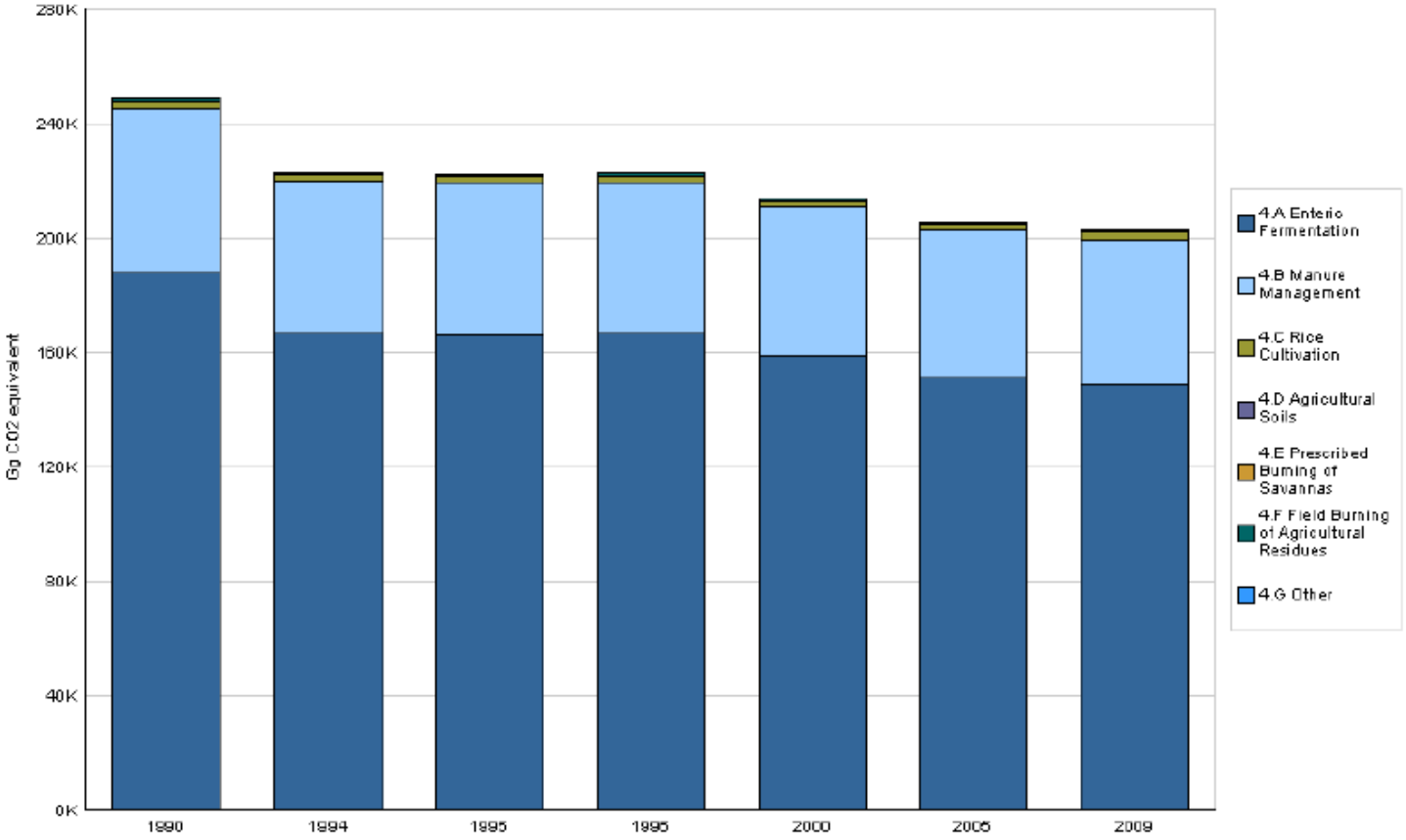
Annual greenhouse gas (GHG) emissions for Canada

Query results for Party: Canada - Years: 1990, 1994, 1995, 1996, 2000, 2005 and last year - Category: 4 - Agriculture - Gas: CH4



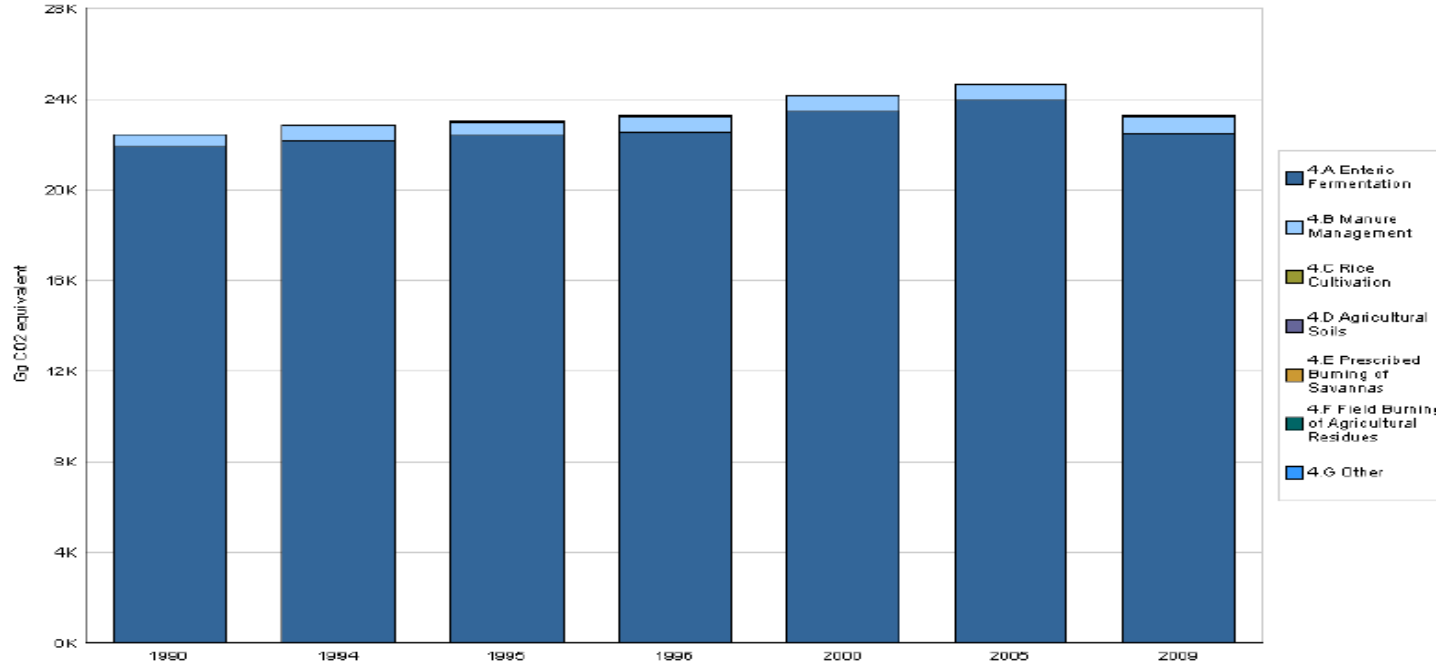
Annual greenhouse gas (GHG) emissions for European Union (27)

Query results for Party: European Union (27) - Years: 1990, 1994, 1995, 1996, 2000, 2005 and last year - Category: 4 - Agriculture - Gas: CH4



Annual greenhouse gas (GHG) emissions for New Zealand

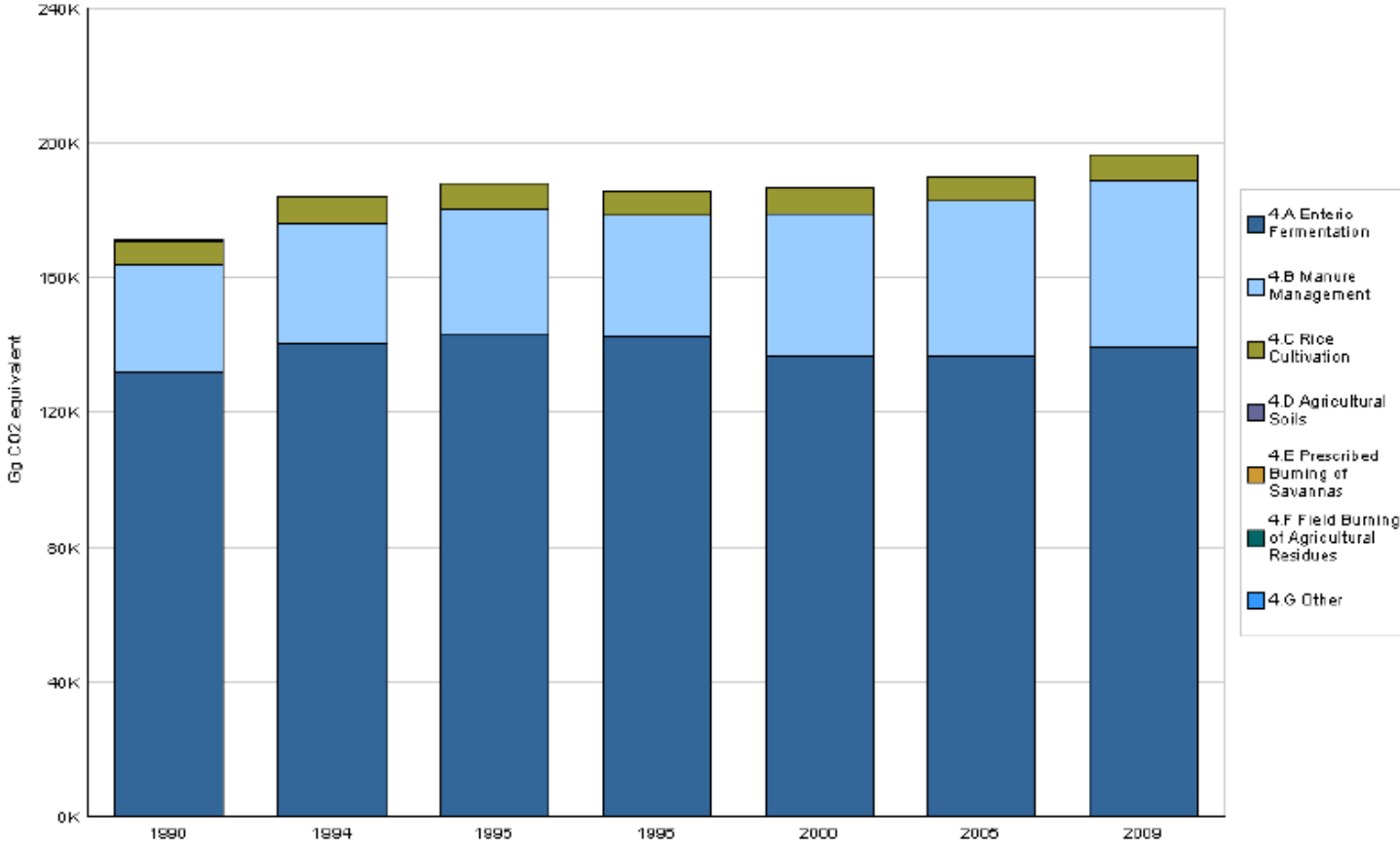
Query results for Party: New Zealand - Years: 1990, 1994, 1995, 1996, 2000, 2005 and last year - Category: 4 - Agriculture - Gas: CH4



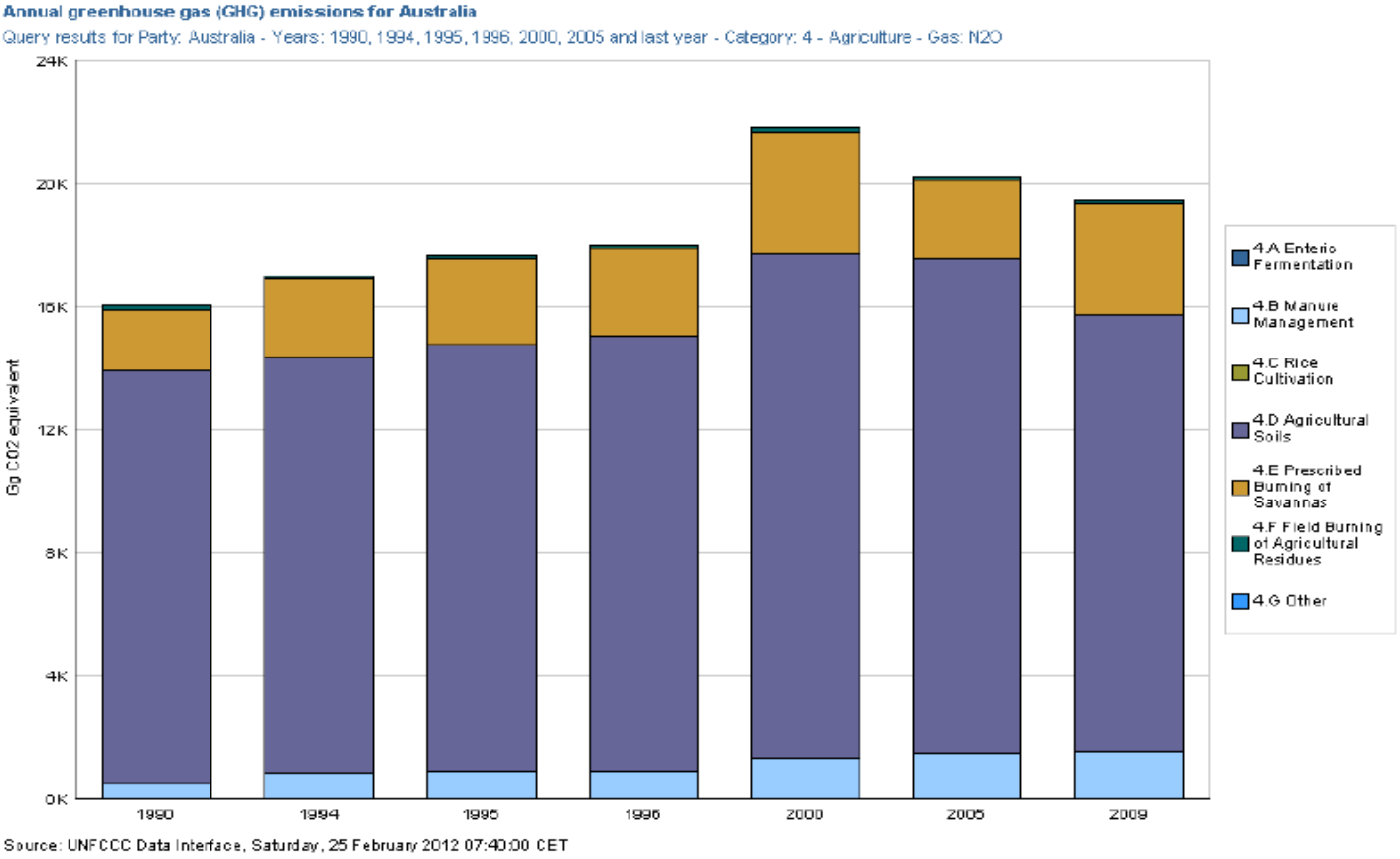
Source: UNFCCC Data Interface, Saturday, 25 February 2012 07:37:42 CET

Annual greenhouse gas (GHG) emissions for United States of America

Query results for Party: United States of America - Years: 1990, 1994, 1995, 1996, 2000, 2005 and last year - Category: 4 - Agriculture - Gas: CH4

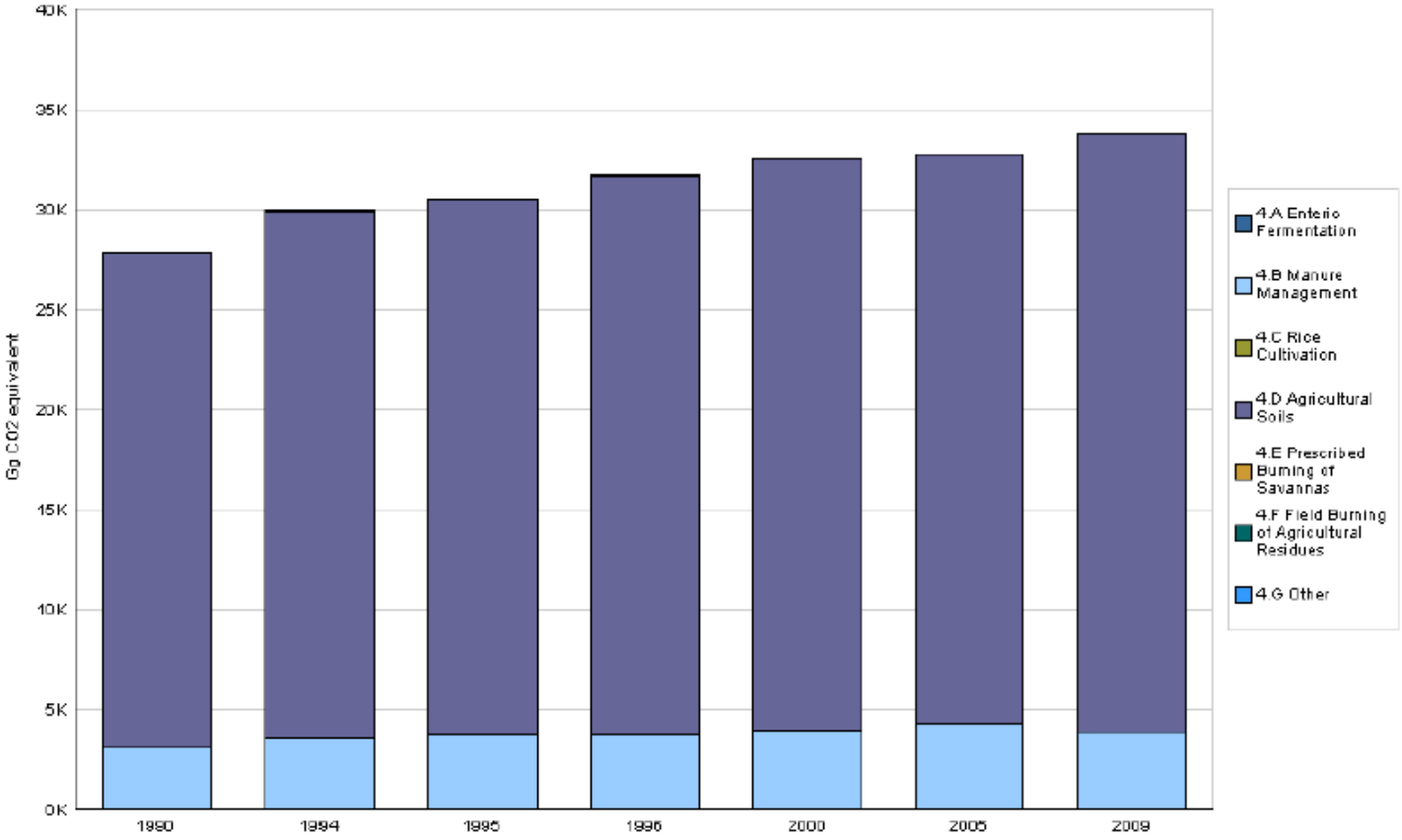


Annex II: Agricultural Nitrous Oxide Emissions as reported by some Annex 1 countries (Source: UNFCCC Data Interface)



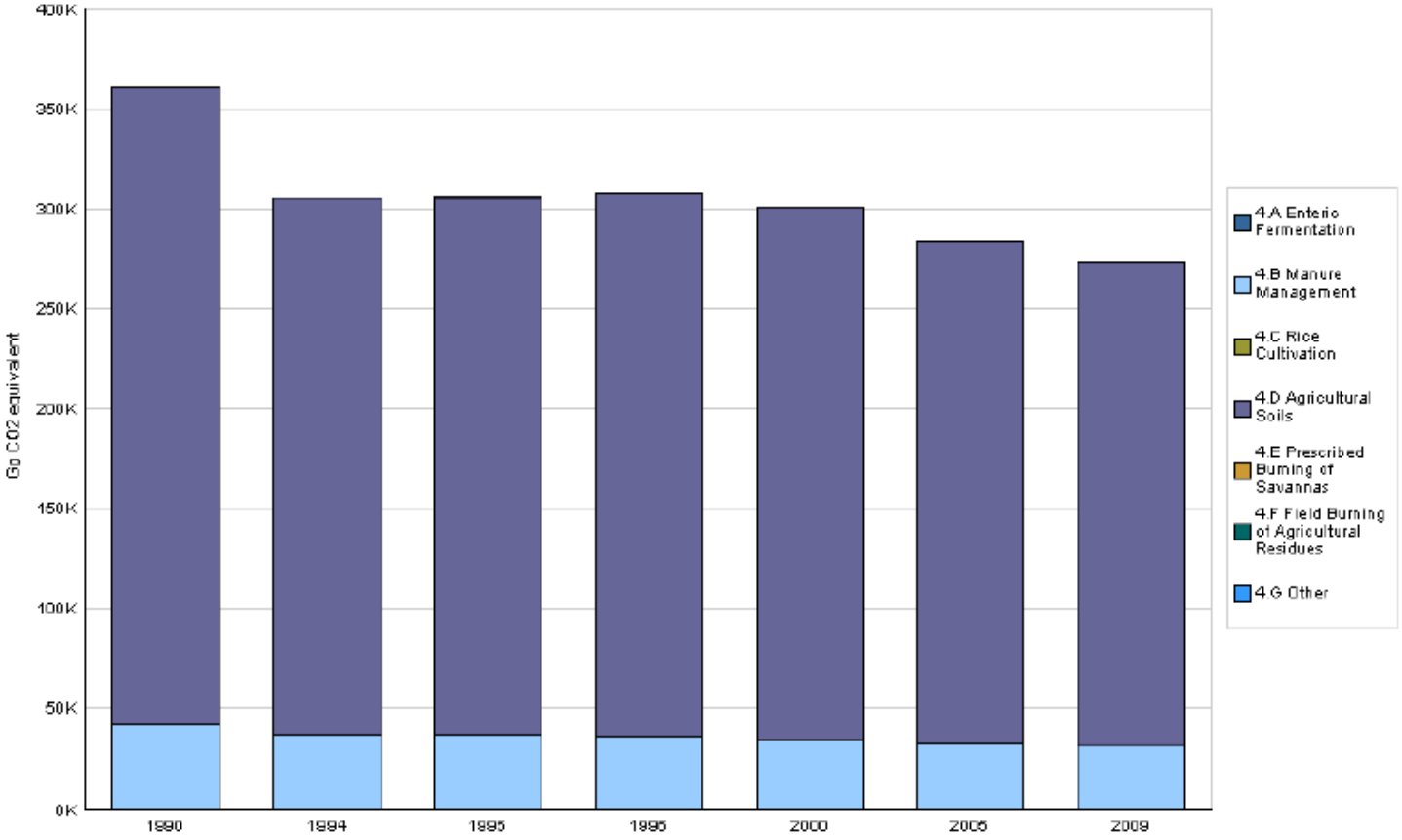
Annual greenhouse gas (GHG) emissions for Canada

Query results for Party: Canada - Years: 1990, 1994, 1995, 1996, 2000, 2005 and last year - Category: 4 - Agriculture - Gas: N2O



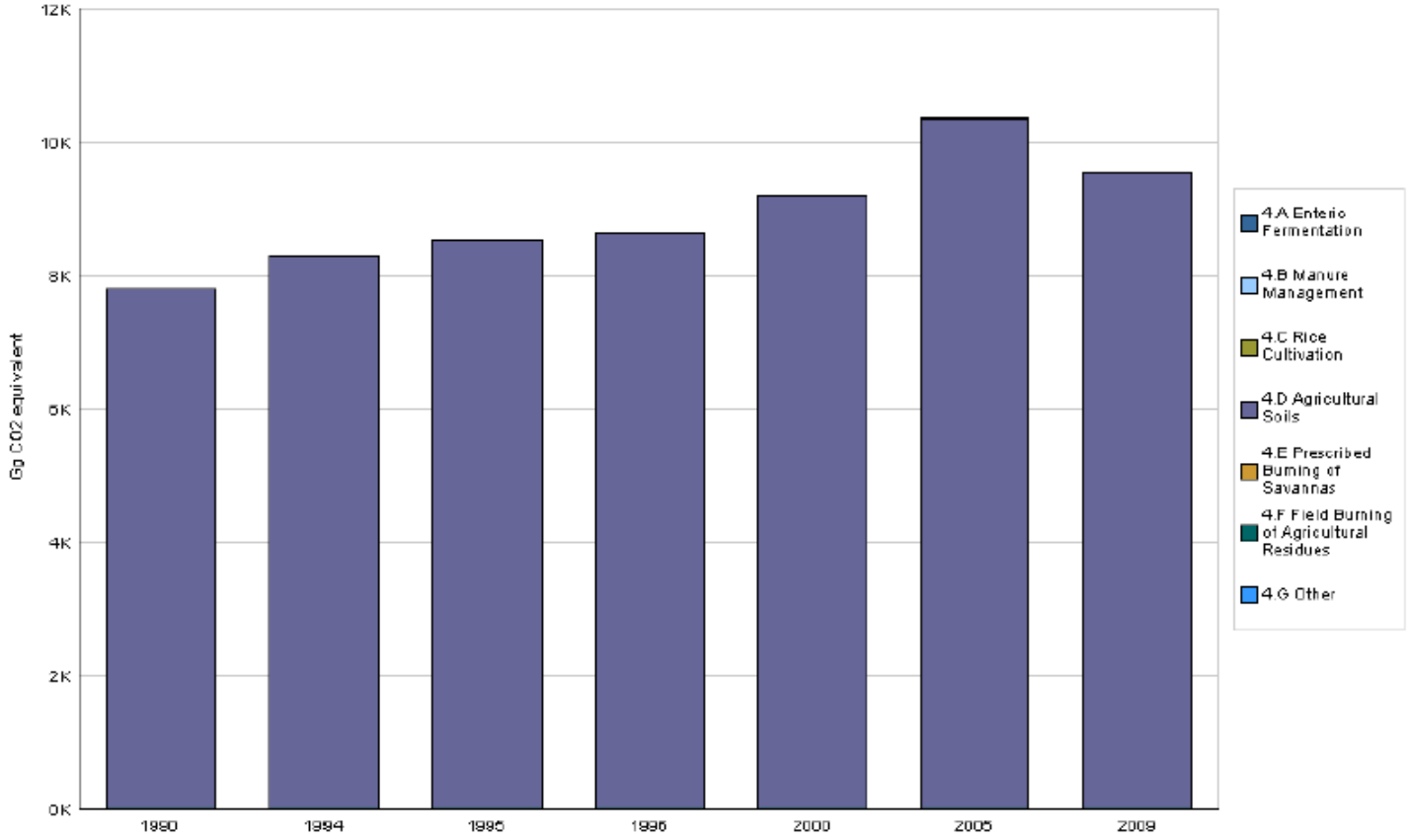
Annual greenhouse gas (GHG) emissions for European Union (27)

Query results for Party: European Union (27) - Years: 1990, 1994, 1995, 1996, 2000, 2005 and last year - Category: 4 - Agriculture - Gas: N2O



Annual greenhouse gas (GHG) emissions for New Zealand

Query results for Party: New Zealand - Years: 1990, 1994, 1995, 1996, 2000, 2005 and last year - Category: 4 - Agriculture - Gas: N2O



Annual greenhouse gas (GHG) emissions for United States of America

Query results for Party: United States of America - Years: 1990, 1994, 1995, 1996, 2000, 2005 and last year - Category: 4 - Agriculture - Gas: N2O