Expanding and reinforcing the objectives of the Kyoto Protocol –

inciting international stakeholders to engage in greenhouse gas transparency[1]

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1 Introduction

Global Warming occurs from the ever increasing release of greenhouse gases such as carbon dioxide (CO2), as well as the following gases methane (CH4), nitrous oxide (N2O), HFC, PFC, and SF6 into the environment. Fossil fuels release these gases when they are burned. The risk that CO2 being released is increasing at such a rapid rate poses a serious threat to the future of our world within the next 100 years or so. The Kyoto Protocol mentions that these six gas emissions do reduce the ozone layer and contribute to the greenhouse effect. In 2006, the hole in the ozone over the Antarctic circle was the over two and a half times the size of Europe.[10] The correlation between greenhouse gases emissions and global warming is certain, thus, an increasing rate of CO2 and other gases will lead to an increasing risk of global warming. It is important to note that during the 20th century the Earth's temperature rose 0.6°C, this will increase to 1.4° to 5.8°C by the end of the next century. The C02 concentration has increased to 40% within this same period and continues to grow at about 2 to 3 ppm per year.[11]

Being the second largest economy, China's growing population maybe a concern to other countries. From 1980 to 2000 energy consumption in China has doubled and recent statistics mention that China's energy consumption will be greater than 25% of the world, which in the future the air and water pollution will significantly effects global warming from it's high greenhouse gas emissions. This consumption would also include the increased use of motor vehicles. Figure A. Not only will greenhouse gas emissions harm China, but it will take a toll on other neigboring developing countries as well that are facing similar energy problems. The result of each individual country reducing it's consumption of fossil fuels as well as the development of Clean Development Mechanism strategies will collectively make a significant impact on the world in the future.

Country	Number of motor vehicles
China	15
United States of America	808
France	596

Table 1: Number of motor vehicles per 1,000 inhabitants by country in 2005, these statistics are from the GIEC

According to the expert Nicholas Stern, rising greenhouse gas emissions harm the world by contributing to rising temperatures, reduced crop yields, coastal flooding, and other environmental changes. In addition, it is important to note that acid rain from China's coal-burning electric power plants plays an important role in pollution that extends across this countries borders. In China, coal combustion produces 70% of carbon dioxide emissions and 90% of sulfur dioxide emissions, and 67% of nitrogen oxide emissions.[12] These statistics point out that acid rain can damage lakes and forests in Japan, Korea, and Russia. In consequence, we can emphasize that rising emissions can have non-neglible international conflicts. The ability for all international counties to work together to limit consumption will benefit each country. A practical way of limiting consumption that China has put into effect was to change price controls. By increasing the price of coals and other energy sources, the demand for coal will decrease as prices increase.

Ideally, each individual country should do their own part, but interests prevent non-governmental organisations (NGOs) from doing anything about global warming because the success of special interest groups such as automobile and oil industries depends on petroleum-based products which pollute the environment. Reducing greenhouse emissions will hurt these industries and businesses economically. Thus people in these industries and politicians who

[10] GIEC
[11] GIEC
[12] Sinton, John. Evaluation of China's Energy Strategy Options 2005.

have an interest in these industries are hesitant and reluctant to combat global warming and to reduce green house emissions.
In addition to special interest groups, there is also a collective action problem. There are countries that have the tendency to free ride on the costs of other countries and do not want to bear the burden of creating a cleaner environment. Moreover cooperation among states is impeded because it is difficult to coordinate the actions of a large number of international states. Individual actions and efforts have a small impact on the global environment. For example, if an individual decides to drive a hybrid car, it will have a small effect in reducing air pollution. This individual also pays a personal cost by paying more money for a low emissions vehicle to help the environment. In this case, the cost is higher than the benefit. Thus, the incentive to buy a hybrid is small. In a similar sense, for many countries who seek to limit emissions, they know that their efforts will have a small effect on the global environment as a whole. Further, if these countries make sacrifices (such as sacrificing income) by having tighter environmental controls, other countries will benefit from their sacrifices. Thus, many countries have a tendency to free ride, and no one is willing to do anything to help the environment, and the global environment suffers.[13]

2 Review on Current Approaches to Combat Greenhouse Gas Emissions

2.1 Governance on the Global Level

2.1.1 State-oriented

2.1.1.1 Kyoto Protocol

To limit the production of greenhouse gases international community, 160 nations, negotiated a global treaty on December 11, 1997, known as the Kyoto Protocol (Kyoto Protocol to the United Nations Framework Convention on Climate Change). The Kyoto Protocol took effect in 2005 which currently bind ratifying nations to a similar system, with the UNFCCC setting caps for each nation. Under the treaty, nations that emit less than their quota of greenhouse gases will be able to sell emissions credits to polluting nations.
But the problem is that the key player -United States did not sign into this treaty. They also inserted loopholes that would further reduce their already very low targets, and in some cases, even allow an increase in greenhouse gas production. Also the Kyoto protocol will be due in 2012.
In conjunction with the Kyoto Protocol some countries created greenhouse gas emissions trading scheme and Clean Development Management (CDM). For example, EU introduce an Emission Trading System (ETS) which contains the world's only mandatory carbon trading program. The program caps the amount of carbon dioxide that can be emitted from large installations, such as power plants and carbon intensive factories and covers almost half of the EU's carbon dioxide emissions. But the emissions trading scheme also has some problems such as how to avoid corruption. For implementing its quotas with respect to the Kyoto Protocol, the European Union (EU) established a market for CO_2 emission rights trading. Non-polluting players utilizing CDM could sell their non-used pollution quota (in units of tons of CO_2 emissions equal one quota) on the market, therewith directly collecting some of their investment in non-polluting technologies. Polluting players on the other hand had to purchase pollution rights – facing infringement by a government rule on reducing pollution in an indirect way. More efficiency and better acceptance was expected by using market forces instead of government fines as a regulatory mechanism.
When implementing the first wave of this system (2005-2007), the EU member states submitted their expected quota in accordance with their national emission targets. Unfortunately, the estimates exceeded well beyond the actual need of quotas which caused the CO_2 emissions

[13] Frieden

market to drop in price considerably, benefiting polluting players by prices for pollution quota well below investment alternatives into CDM. Another problem is the lack of transparency mechanisms to trace the sales of the emissions quotas.
This first experience can serve as a lesson to the second wave of the EU ETS (2008-2012) as well as other states envisioning similar governance mechanisms for pollution rights. A revised implementation of this program in developing countries would be obligated to highlight the need for a strict and sincere government control coupled with latest understanding on CDM alternatives as well as close supervision and education of regulatory institutions. Successful transfer of the EU ETS experience was reported from developing countries[14] advocating ETS to be an interesting field of future emission reduction using a structured and closely governed market mechanism.

2.1.1.2 Intergovernmental panel on climate change (IPCC)

The World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP) establish the IPCC in 1988. The IPCC assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation. The IPCC does not carry out research nor does it monitor climate related data or other relevant parameters. It bases its assessment mainly on peer reviewed and published scientific/technical literature.

2.1.2 Market-oriented: Multinational corporations

23 multinational corporations have come together in the G8 Climate Change Roundtable, a business group formed at the January 2005 World Economic Forum. The group includes Ford, Toyota, British Airways and BP. On 9 June 2005 the Group published a statement stating that there was a need to act on climate change and stressing the importance of market-based solutions. It called on governments to establish "clear, transparent, and consistent price signals" through creation of a long-term policy framework that would include all major producers of greenhouse gases.

2.1.3 Society-oriented: Green NGOs and NGO networks

NGO is an important social power except market and government. The environment problem become increasingly seriously which gave birth to many more green NGOs, such as Greenpeace International. Greenpeace is present in 40 countries across Europe, the Americas, Asia and the Pacific and Greenpeace and speaks for 2.8 million supporters worldwide. As an independent global campaigning organisation she acts to change attitudes and behaviors, to protect and conserve the environment and promote peace by using research, lobbying, and quiet diplomacy to pursue our goals, as well as high-profile, non-violent conflict to raise the level and quality of public debate.

2.2 Governance on the National Level

2.2.1 State-oriented

2.2.1.1 Pollution taxes (Taxation)

Many countries are taking taxation to reduce pollutions. However, the pollution taxes have regressive effects. For example, a carbon tax would raise the price of energy products, products that are necessities in household budgets.

[14] www.carboncredits.nl reports on a 513914 CER 9 year project in Mongolia.

2.2.1.2 Nationwide market for emission trading

U.S. Acid Rain Program (1990) implemented a nationwide market for electric utilities' sulfur dioxide (SO2) emissions of the 1990 Clean Air Act in the USA. Under the program, which is essentially a cap-and-trade emissions trading system, SO_2 emissions are expected to be reduced by 50% from 1980 to 2010.
China also has started its SO2 emission trading pilot program, introducing a total emission control, which is fully subscribed in the 11th five-year plan.

2.2.1.3 Clean development management (CDM)

CDM projects have been implemented allow developing country members of the Kyoto Protocol to earn certified emission reduction credits (CERs). These credits can further be used by developed countries to meet national emissions quotas. These projects must be approved by the CDM Executive Board. This system is supplementary to domestic emission reduction policies. This means that they would not necessarily have been put into action if they were not supported by the CDM framework.
Many countries are developing the clean energy, for example clean coal. China also has suggested a solution, which is to decrease the emission of CO2 by using water and nuclear technology to generate power. However, it has some problems: nuclear technology produces nuclear wastes; using water will cause the disputes between provinces which share one river (e.g. Yangtze River).

2.2.1.4 Licensing

China's energy strategy is to "protect the natural environment even as energy use increases" We can note that China recent admission to the Kyoto Protocol affirms the government's dedication to clean development. As an excellent role model for other emerging economies and developed countries, China has also worked to use variety of different strategies to reduce not only carbon dioxide emissions but also multi-gas emissions through emissions trading pilot projects, and Clean Development Mechanism projects (CDM). In 2004, the Secretary of the Environment initiated a licensing system to regulate the air pollution in the cement, aluminum electrolyse, and steel industry. Each company currently accountable for all of their emissions. Only firms that follows governmental standards are granted licenses, those that do not comply with these standards are obligated to close permanently. Through a collective organisation, China's progress can benefit other emerging economies.

2.2.1.5 P2E2 (Pollution Prevention and Energy Efficiency)

To reduce the production of greenhouse gases some states cooperate each other. For example, China-US Cooperation in Industrial Pollution Prevention & Energy Efficiency is including training the Chinese officials and cooperation in technology.

2.2.2 Market-oriented

2.2.2.1 Industrial process change (Flexible manufacturing technologies)

Flexible manufacturing can occur in traditional industries (for example, textiles) as well as in the Internet based economy[15].

[15] Gilbert E. Metcalf, Tax Policy Towards Energy and the Environment, *NBER Reporter*, Winter 2006/7)

2.2.2.2 Technology change (Multi-gases emission reduction technology)

In addition to CO2 emission mitigation, there are also non-CO2 gases affecting the climate changes. The study of these non-CO2 multi-gases are covered by Kyoto Protocol and is conducted by using Integrated Policy Assessment Model for China (IPAC). The IPAC is focused on China in analyzing emission and energy conservation. "Major emission sources including energy activities, industries, land use, agriculture, and forests can be simulated in the model framework." In this study, the multi-gas emission consists of six gases which are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), HFC, PFC, and SF6. Table 1 enlists these gases as well as the sources that emit these gases such as energy combustion, land use change, industrial production processes, and utilization of products.

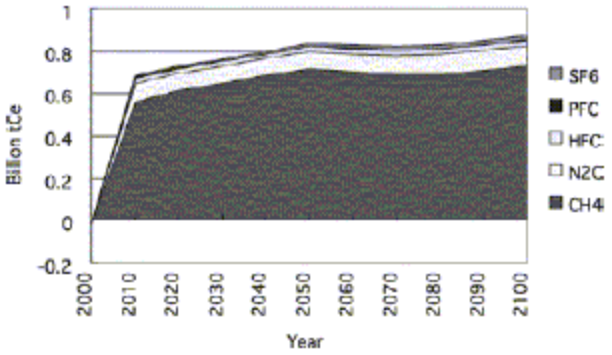

Figure 1: Non-CO2 reduction in Multi-gas Scenario (adopted from Jiang)

Figure 15. GDP Loss

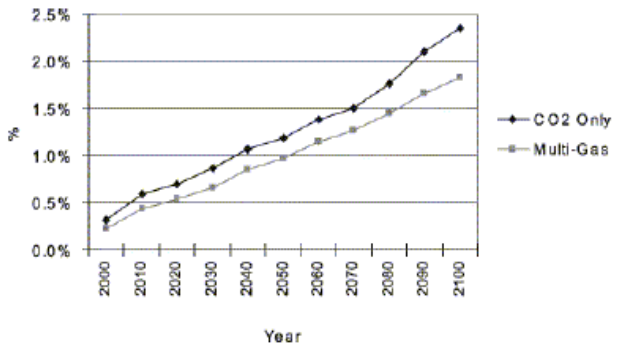

Figure 2: GDP Loss (adopted from Jiang)

The consumption of the multi-gas will impact GDP, which is highly sensitive to energy price changes. According to the Nicholas Stern Review, it highlighted the importance of rapid and collective efforts to regulate climate change. An important point in this review is that collective actions to combat climate change would actually cost only 1% per year of the world's GDP. However, over the course of many years, inaction against climate change would create an enormous debt of an estimated 20% of global GDP. In order to reach an ideal emission target, carbon tax was initiated which is applied to all the gases covered in the multi-gas study. By 2100 carbon tax would increase from US$25/t-Ce in 2000 to US$210/t-Ce. In addition to the increase in carbon tax, GDP loss will be 23% less than CO2 emission and 1.8% loss by 2100 (see Figure 15). "By 2020 there could be nearly 30% emission reduction for non-CO2 gases, and it would be 35% emission reduction in 2100."

Taken from the figures in regional distribution of non-CO2 gases mitigation, together China and South East Asia take 45% of the total emission reduction (see Figure 17). Thus, this IPAC study completed by the Energy Research Institute from Beijing shows that there will be roughly 30% non-CO2 emission reduction by 2020 and 34% emission reduction by 2100, "which will give

less impact on GDP growth regarding to GHG mitigation." In the long-run perspective for developing countries, having multi-gas reduction would be useful in stabilizing GDP by reducing it's loss by 22.3% at minimum by year 2020.[16] It would be favorable to not only tax CO2 emissions, but also multi-gas emissions.

2.2.3 Society-oriented: NGOs

Non-governmental organisations (NGOs), especially environmental ones, were playing an important role in the political, social, and economic transitions at the time. In terms of reducing greenhouse gas emissions a small local NGO can achieve as much as a huge multinational energy company. In Laos, wood fuel is widely used for cooking. However, most households use open fires because proper stoves are still lacking. A local NGO, the Participatory Development Training Center (PADEC), is now introducing improved wood and charcoal stoves at a rate of 15,000 units per year. The improved stove saves at least 30% of the wood fuel as compared to an open fire. In addition to the advantages for the users, fuel saving implies reduced emission of greenhouse gases for the planet Earth.
Canadian Clean Power Coalition is an association of responsible, leading Canadian coal and coal-fired electricity producers. Within the context of Canada's multi-fuelled electricity industry, its aim is to secure a future for coal-fired electricity generation by proactively addressing environmental issues with governments and our stakeholders.

2.3 Governance on the Local Level

2.3.1 States-oriented

Local governments sometimes are more initiative than states. The key issue is how much power local government has in translating their political will into action. Australia is a good case. Prime Minister John Howard of Australia has refused to sign Kyoto Protocol, saying it does not address key issues between developed and developing nations and hurts Australia's coal-driven economy. But many Australian local governments are delivering their own plans, including joining Cities for Climate Protection, an international program which assists local governments and their communities to reduce greenhouse gas emissions. The City of Greater Dandenong is just one of the councils awarded for their greenhouse gas reduction actions which include a Green Power purchasing program that has reduced annual greenhouse gas emissions by 7,970 tons. 218 local governments, representing 82 % of Australia's population, have become world leaders in reducing greenhouse gas emissions at the local level.[17]
In China, one may argue that the failure in implementing national policy at the local level is a result of weak central government, and thus empowering the central government could lead to a solution. In the new national plan, "fully utilizing the functions of government" is repeatedly mentioned. Yet, the Chinese central government already has the ultimate authority of decision-making, personnel appointment, and funds appropriation. To a large extent, this single-minded top-down administrative approach oftentimes does not function well in improving a country's domestic governance. Information disadvantages could cripple the central governments' ability to supervise the performance at local levels.

2.3.2 Market-oriented

Oil companies, electric power utilities, cement makers, chemical and steel plants would all be affected by greenhouse gas caps and have formed a coalition aimed at derailing legislations of greenhouse gas reduction. These industries say these bills would hike energy costs and force carbon emitters to cut production. Another argument put forward by business interests is that

[16] Jiang, Kejun The Energy Journal *Energy Research Institute*, Beijing 2006 p436.
[17] http://www.environment.gov.au/minister/env/2003/mr08apr03.html

instead of meeting the caps, some companies will simply shift operations to other states and emit carbon gases from those states. Nevertheless, once these bills come into effect, local companies have to accept it. Most of them spend great amount of money to update their technology and equipment, rather than move out of the current communities as they have claimed. Some Businesses are taking the lead. For example, Dupont has reduced its own greenhouse gas emissions by 67 percent below 1990 levels. Some forward-thinking utility companies are integrating their efforts with the local community, such as reimbursing home owners who generate more power than they use.

2.3.3 Civil Society

NGOs and individual citizens are the most significant actors on local level.While there is no question that the laws and policies of nations remain paramount in reducing carbon dioxide emissions and supporting cleaner alternatives, many of the most promising ideas and efforts are now coming from state and local communities. In the United States, scientists, activists, local politicians, and scores of individual citizens have stepped in where the federal government has failed to take the lead in combating the causes of climate change.

Even though the infrastructure and tax incentives are not yet in place to facilitate extensive use of renewable energy, there are many things that individuals can do to use less energy in their daily lives. Using public transportation, purchasing energy-efficient appliances, insulating one's home, and using compact fluorescent light bulbs are just a few things.

In addition to these efficiency measures, many more Americans are opting for "green power." Eco-friendly homes are becoming more popular, for example, in places like Phoenix, Arizona. Despite higher up-front costs to do things like install solar panels, there are lower operating costs over the longer term.

The environmental movement worldwide has consistently campaigned on the Three Rs, or "reduce, reuse, recycle." Educational institutions and local governments have been at the forefront of encouraging consumers to be more aware of wasteful packaging and to think more carefully about what's going into burgeoning landfills.

Some NGOs, like the Integrative Strategies Forum, have taken these mandates further by advocating more sustainable patterns of production and consumption. Building alliances among NGOs and others promoting sustainable lifestyles is central to their work, as is persuading the world's governments to place these ideas at the heart of economic policy.[18]

Our objective is to incite countries to adopt clean development strategies to limit their greenhouse gas emissions. This strategy was also confirmed by a recent study at the Lawrence Berkeley National Laboratory, the National Renewable Energy Laboratory, and the China Sustainable Energy Program. They mentioned that emissions and energy policy must take into account all stakeholders interest to facilitate implementation. As mentioned at the International Governance Conference for Ecology in Paris this past February, (Conférence de Paris pour une gouvernance écologique mondiale (GIEC)),international efforts to reduce greenhouse gases have been fragmented among 500 multilateral agreements on environmental legislation, 300 of these are regional agreements. There are also over 20 different institutions linked to the UN and international financial institutional systems. This is due to the interdisciplinary nature of climate regulation and the fact that climate control has only begun to become important on an international level. Hence, there is a need for an international mechanism that can reinforce the doctrine in the Kyoto Protocol, handle disputes, and create effective sanctions.

[18] http://www.commondreams.org/headlines05/0727-04.htm

3 The International Emissions Organisation (IEO) – A mechanism that expands and reinforces the objectives of the Kyoto Protocol.

We would like to propose the creation of an international organisation that supports and enforces international efforts to reduce greenhouse gas emissions. Similar to the World Trade Organisation and its ties with the GATT doctrine, this institution would be inherently linked to the objectives of Kyoto Protocol.
This collective organisation could have an impact on member countries as well as non-member countries of the Kyoto Protocol to encourage their future sustainable development policies. This organisation would be complimented by a **transparency mechanism** that assures the quantities and ratios of greenhouse gas emissions of each country member for products and total country emissions as well as **product ratings** for energy efficiency and emissions (for cars, burners, heating devices, insulation). Encouraging CDM projects, ETS, etc. It would not only serve as an mechanism to emphasize sustainable development but also a **forum** to unit advanced countries and emerging countries to encourage research and development technology transfers notably in the energy sector. For example, the latest information and technology on the multi-gas implementation projects would be beneficial to many developing countries. The IEO will draw part of its legitimate power as an International Organisation from a strong linkage with the WTO. Particularly, there must be ways the IEO can impose sanctions on WTO member states which do not comply with IEO labelling and IEO grading. It might show particularly efficient to be able to ban products from international trade when proper pollution-relevant labelling is missing. International Emission Organisation will be managed by a 15-member board consisting representatives from states as well as NGOs. 10 state representatives are elected by all the member states, while 5 NGO representatives are elected by all the NGOs listed as consultants by United Nations Economic and Social Council. They will share the power of supervising global greenhouse gas emission. That would be a great change of current decision-making process, which is dominated by states. That would also mean a change of governance patterns for climate change from statism to multi-centred governance on all levels.

National interests to incite developed countries to join the IEO

- -Links to emerging economies for future FDI in all sectors
- -Assured economic security/Access to energy resources
- -Improved diplomatic relations with member countries
- -International public opinion/improved credibility
- -Participation in an international forum that unites a multitude of governments as well as NGOs.

National interests to incite developing countries to join the IEO

- -Access to loans to finance emission reduction projects,
- -Improved diplomatic relations with member countries
- -International public opinion/Improved credibility to encourage FDI and R&D from developed countries in energy sectors as well as other industrial sectors that apply to emissions reduction. This is also an international trade related matter.
- -Participation in an international forum that unites a multitude of governments as well as NGOs.

Figure 3: national interest to incite countries to join the IEO

It is important that this organisation can unite various sustainable development strategies across the globe and encourage cooperation between all members. This type of international organisation could encourage non-member countries to join for a variety of reasons that are highlighted in the Figure 3. Through international cooperation all members would benefit from transparency on emissions, international opinion, and preferential or low cost access to clean development technologies. Similar to World Trade Organisation, developing country members would also be granted a certain degree of flexibility to help them meet emissions their standards. As always, power comes from resources available, particularly financial resources. In the case of IEO these will emphasize, support, promote and initiate CDM projects and further Research and Development (R&D) in green gas emission reduction. Particularly, IEO funds shall be made available to developing countries giving them access to the latest technology as their economy develops and energy resources are increasingly in demand. Financial resources might be drawn from IEO member states, corporate sponsors for particular projects, and advantageous joint financing with development banks and the World Bank.

In the past five years, China has become an excellent role model for other Asian developing countries. This nation's role is especially important because China is one of the leading countries to emit greenhouse gases. One of the major problems is that the emissions continue to increase as the economic growth soars. This phenomenon is not only common to China but to other developing countries in this region of the world. Countries like China could benefit from international support to help reduce greenhouse gas emissions. An international organisation could facilitate a collective response to China. As noted above there are actually a plethora of multilateral agreements, the European Union has financially supported clean development strategies and the US has influences pilot SO2 emissions trading projects. It is possible to increase this support on an international level.

It is important to note that one of the biggest obstacles to emissions reduction is transparency. Many developing countries struggle with **corruption and lack a certain degree of comparability among products and services.** To address the issue of International Emissions Organisation could work to particularly to increase transparency of pollution for various products, we argue the cause of developing a product labeling system by industry. This will allow products to be compared in respect with their pollution impact in comparison with industry best practices as we know it in respect to the energy efficiency of consumer products[19] (European Union, Energy Saving Trust, and Australia Rating on Energy Efficiency). In the car industry, such emissions related ratings are already commonly in use but not comparable across countries. The German ADAC measures a series of emissions to attribute a 1 to 4 star rating to each and every car model (ADAC 2007); EPS in the United States does similar tests (compare EPS website). In some countries, more polluting cars are subject to higher tax or banned completely from selling anew (most prominently, consult on California as mentioned by Associated Press 2007 or California Bill AB 1493). More polluting industries and countries though are still not adhering to any scaling or grading system.
Such a declaration scale can only complement current efforts in reducing greenhouse gas emissions, such as Emission Trading, search for Clean Energy Sources et cetera. The declarative scale brings in further advantages such as international credibility, international comparability, national adaptability, rising final consumer awareness and allowing for price differentiation for consumers. Building an international Organisation for long-term sustainable governance of these issues is paramount.

[19] For an illustration consult the appendix listing different energy labels from Europe, Australia, Mexico

Benefits could include:

1. **international comparability**: an agreed upon scaling system can embrace international production and distribution processes as we observe them in many industries these days. This is critical for including developing countries in the greenhouse gas emission measurement.
2. **national adaptability**: once the scale is developed and internationally agreed upon, local regulation must enforce its declaration and use on the final products. Local regulation may furthermore impose penalties on polluters or polluting products. This allows for sovereign discretion in policy between different nations using their existing institutions and regulatory framework.
3. **Rising final customer awareness**: when customers recognize which products contain components with a high pollution production potential, they are able to change their purchasing behaviour. Raising awareness across all levels from sourcing
4. **Price differentiation**: if the final customers have a way of recognizing the pollution differences of products they can choose from, the vendors and thus the producers can collect a price premium on the product either by appealing to the customer's ethics or – even better – offering a real price advantage on the long run as the consumer will benefit from lower taxes due to less pollution or other benefits (less energy consumption, longer life or alike) of the better scaled product.

All member nations of the International Emissions Organisation are subject to be accountable not only for their nations total emissions but also, increasing transparency through product labelling. In the future, this organisation could develop international norms and standards for high emissions products. This framework would be coherent with national objectives to meet emissions quotas according to the Kyoto Protocol.

4 Conclusion

Pollution and greenhouse gas emission reduction is a truly global issue. Its causes and effects a multitude of stakeholders' interests. We can see how governments, communities, individuals, industries, geographic regions, and non governmental organisations are strongly interlinked across the globe. Various governance implementations are have been used on various levels – internationally, nationally and locally. In recent years, stakeholders around the world have become increasingly aware of the importance of protecting the environment by reducing emissions. Legislators have thus launched numerous initiatives to reduce greenhouse gas emissions again on many different levels, one of the most visible being the Kyoto Protocol, California's car emissions legislations and the European Union Emission Right Trading System.

So unfortunately, the world today faces a patchwork of legislations, NGOs, profit-making stakeholders and other players with varied foci and interests. In particular, most of the current governance concepts in use lack transparency to the end users or consumers, they also do not relate the political objectives with concrete implementation measurements, and lack an international profile.

During the discussions at the Youth Innovation Competition on Global Governance, our world team A has developed a truly global approach by creating the International Emissions Organisation (IEO) bringing together the various stakeholders in a concise framework streamlining the many existing and future initiatives. Complementary to current legislation and regulation, the IEO would need to be equipped with a number of tools, powers, governance mechanisms and incentives to overcome some of the obstacles of the current approaches. These include:

- Internationally standardized pollution grading to measure emissions at the national level and labelling of consumers products increasing transparency
- Linkage with WTO sanctions mechanisms to exclude non-compliant products from international trade
- Economic and diplomatic incentives to member countries
- Financial support for CDM and R&D in pollution reduction technologies
- Act as a forum of interaction with NGOs and international public opinion

The IEO would be founded on the basis of the Kyoto Protocol doctrine but take emission reduction objectives further into a more operational perspective by including binding institutional governance rules for dispute settlement, membership and so forth. Creating IEO, member states would commit long-term to reducing greenhouse gas emissions and make a lasting change to public policy with respect to pollution. It is to be expected that high profile non-member countries of the Kyoto Protocol will be incited to become a member by the influence of the IEO and its links to the WTO. The earth's environment urgently needs an irrevocable commitment in greenhouse gas emissions policy.

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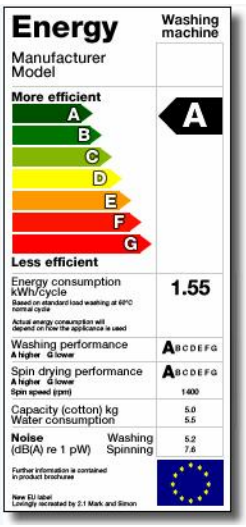
6 Appendix – Energy Labels

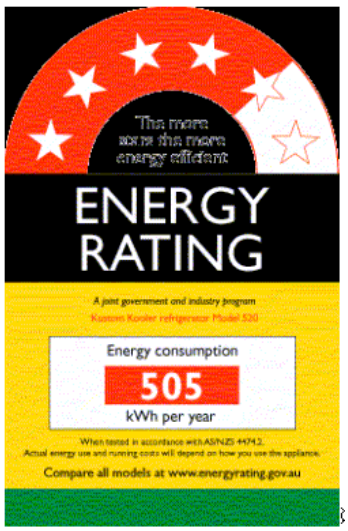
Table 1. Source of Emitted Gases in IPAC-Emission

Gas	Sources			
	Fossil fuel use and production	Land use change	Production process	Others
CH_4	Fossil fuel combustion	Deforestation		Landfill
	Leakage from extraction	Cultivation		Sewage
		Enteric ferment		
		Agricultural waste burning		
		Biofuel resident		
CO	Fossil fuel combustion	Deforestation		
		Agricultural waste burning		
		Biofuel resident		
N_2O	Fossil fuel combustion	Deforestation	Nitric acid & adipic acid production	
		Agricultural waste burning		
		Biofuel resident		
		Manure management		
N_{ox}	Fossil fuel combustion	Deforestation	Steel & cement industry	
		Agricultural waste burning		
		Biofuel resident		
S_{ox}	Fossil fuel combustion	Deforestation		
		Agricultural waste burning		
		Biofuel resident		
NMHCs	Fossil fuel combustion			
HFC			Production of HCFC, refrigerator	Use and disposal of air conditioner, refrigerator, solvent, distinguisher
PFC			Use of electricity facilities, other equipment	Use and disposal of air conditioner, refrigerator, solvent, distinguisher
SF_6				Use of electricity facilities, other equipment, fire distinguisher

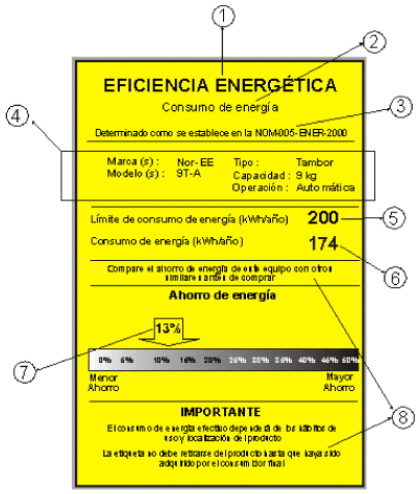
adopted from Jiang, Energy Institute Beijing, 2006



EU Label on Energy Efficiency
http://www.energysavingtrust.org.uk/energy_saving_products/other_energy_labels/the_eu_energy_label/



Australia Rating on Energy Efficiency
http://www.energyrating.gov.au/con3.html



Mexican Label on Energy Efficiency