

Lecture at Tama University

Emissions Trading & Carbon Offset

1. Why should you care about climate change?
2. What is emissions trading?
3. Why hasn't emissions trading been started in Japan?
4. Local to national? – Tokyo's cap & trade system
5. Alternative path? - Carbon offset
6. Carbon offset practices in the travel & tourism industry

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Why should you care about climate change?

That is because it affects **YOUR** future.

Observed changes

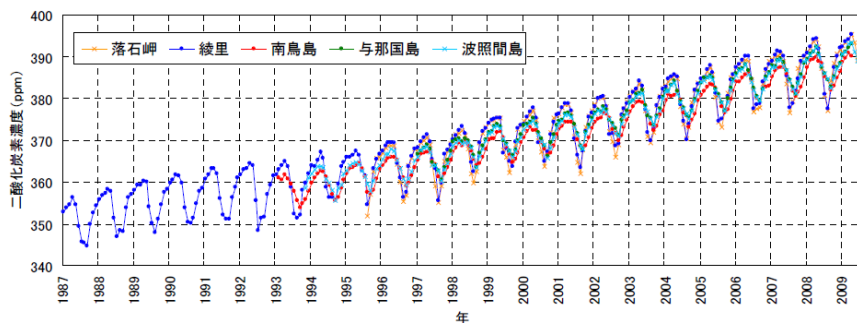


図1 各観測所における二酸化炭素濃度の観測結果（月平均値）

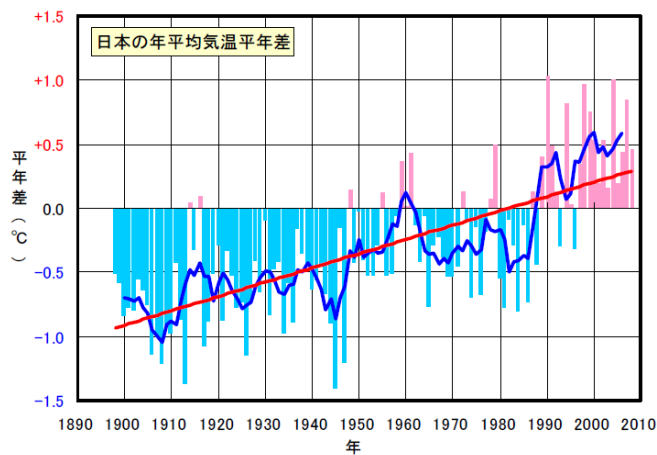


図2 日本の年平均気温の変化（1898～2008年）

Projected changes

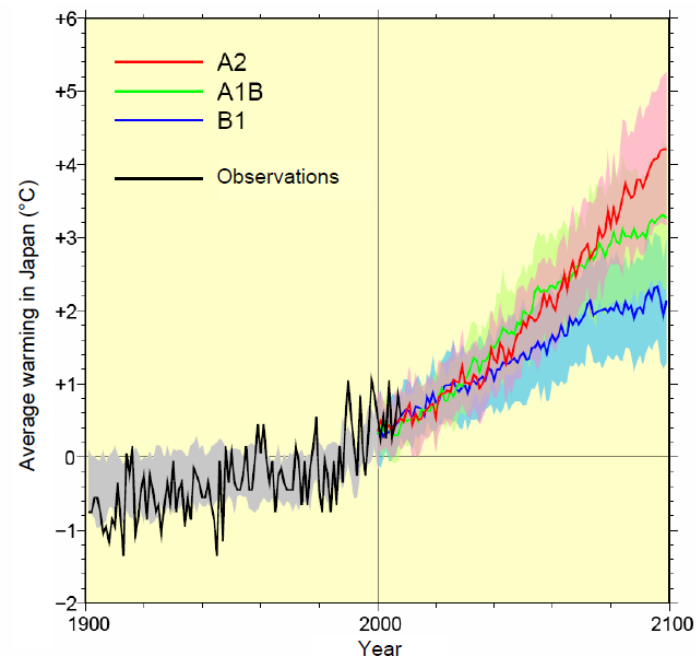


Fig. 3.2.5 Projected average temperature in Japan

(Scenarios)

A: Society that emphasizes economic growth

B: Sustainable society in harmony with the environment

1: Case in which regional disparity narrows and globalization advances

2: Case in which regional uniqueness intensifies

Projected impact of climate change in Japan - Food

Climate change will impact our daily lives. It has already changed the yield of food production, and will change the distribution of suitable land for cultivation and fishing

Observed changes

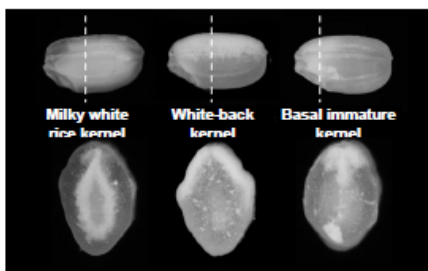


Figure 1 White immature grains from irrigated rice (Morita, 2005)



Figure 2 *Ukikawa* symptoms in mandarin oranges due to high temperatures and heavy rain

Photographs provided by: Fruit Tree Research Division, Agricultural Technology Research Center, Hiroshima Prefectural Technology Research Institute

Projected changes

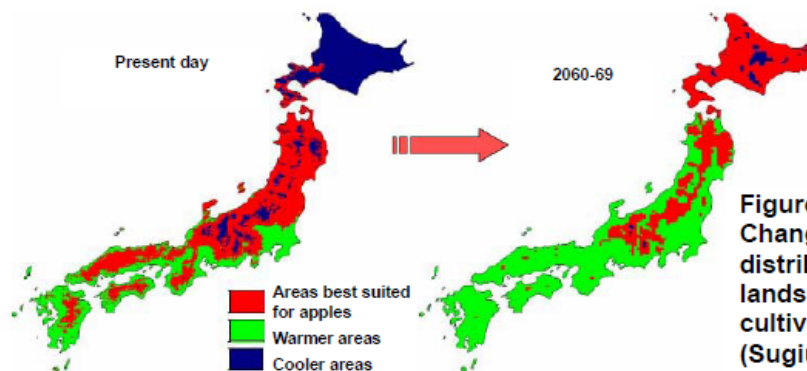
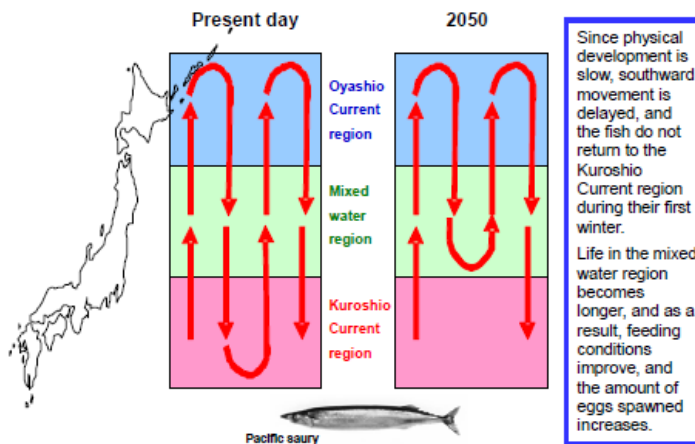


Figure 3 Change in the distribution of suitable lands for apple cultivation (Sugiura, et al., 2004)



Since physical development is slow, southward movement is delayed, and the fish do not return to the Kuroshio Current region during their first winter. Life in the mixed water region becomes longer, and as a result, feeding conditions improve, and the amount of eggs spawned increases.

Figure 4 Migration route of the Pacific saury, calculated using a numerical model (adapted from Ito, 2007, a, b)

Projected impact of climate change in Japan – Tidal wave

Climate change may change Japan’s landscape. Bay areas may sink under water.

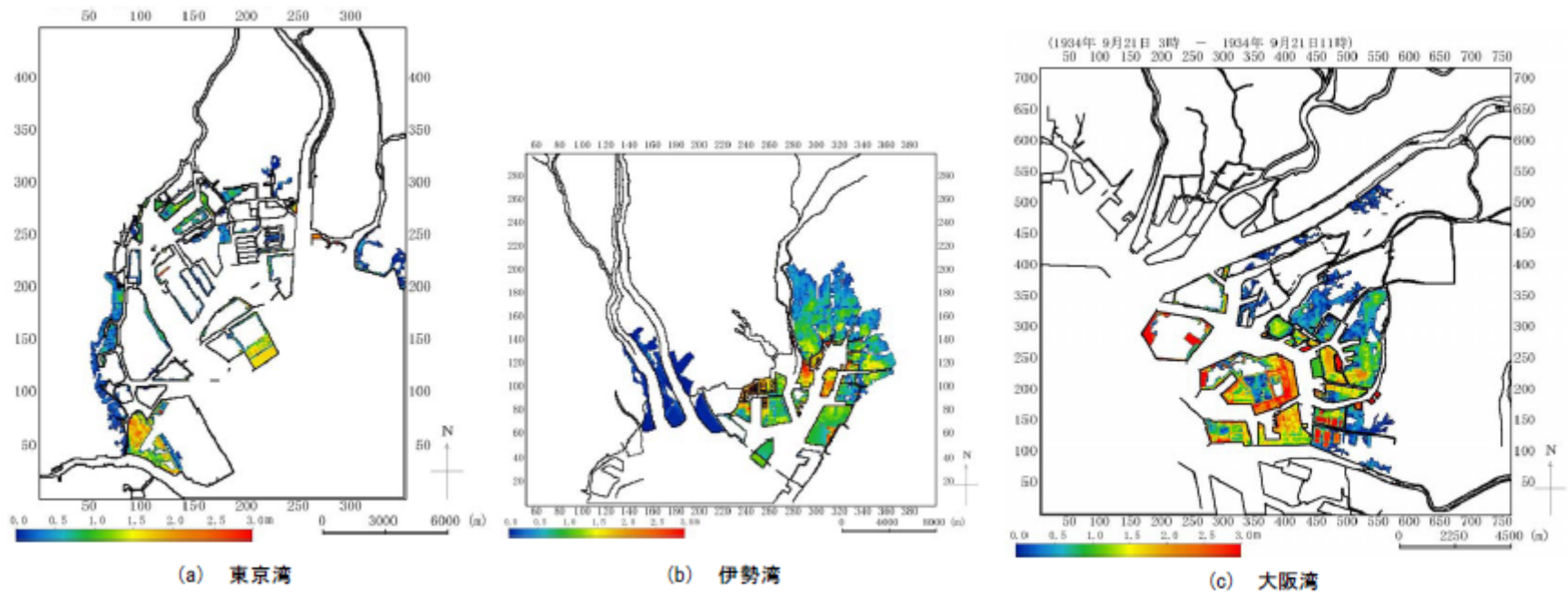
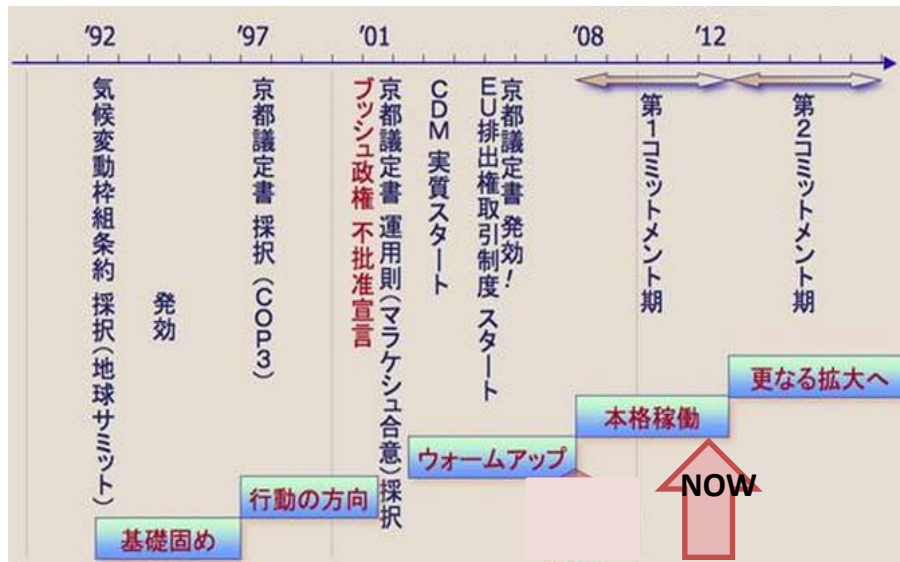


図 I-IV-5 2100 年気候時における三大湾奥部における高潮浸水深

What is emissions trading?

Emissions trading is one of the most effective ways of reducing GHG emissions. It was introduced by the Kyoto Protocol as one of market-based mechanisms to achieve Kyoto targets.

History of international discussions & commitments



The three Kyoto mechanisms:

1. Emissions Trading
2. Clean Development Mechanism (CDM)
3. Joint Implementation (JI)

The Kyoto mechanisms:

- ✓ Stimulate sustainable development through technology transfer and investment
- ✓ Help countries with Kyoto commitments to meet their targets by reducing emissions or removing carbon from the atmosphere in other countries in a cost-effective way
- ✓ Encourage the private sector and developing countries to contribute to emission reduction efforts

Emissions trading is an approach to reduce emissions by providing economic incentives for achieving emissions reductions

The purpose of emissions trading system

The introduction of emissions trading system has been discussed in Japan for very good reasons listed below.

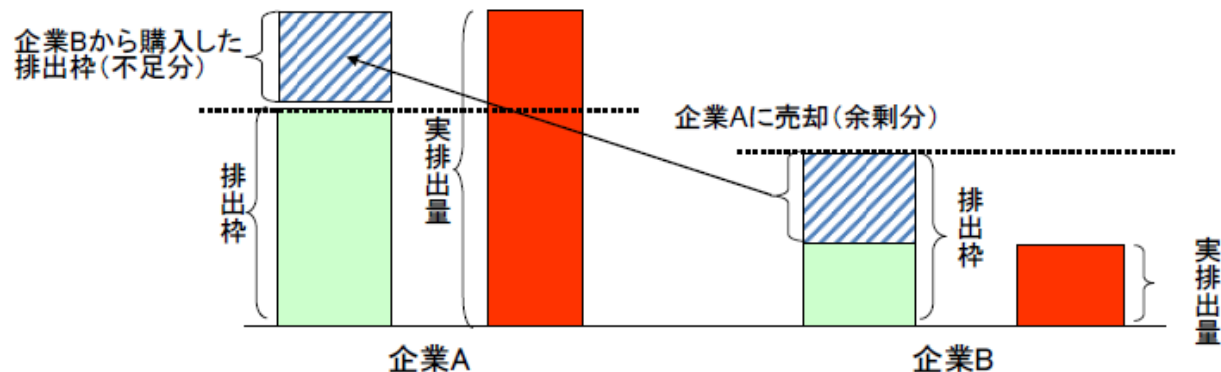
- 公平で透明なルールの下、排出量に限度(キャップ)を設定し、削減の取組を確実に担保する。

 - ・個々の企業に排出枠(温室効果ガス排出量の限度:キャップ)を設定し、排出削減の確実な実施を担保する。
 - ・中長期的な排出削減に向け、努力した者が報われる公平で透明なルールを構築。
- 排出枠の取引等を認め、柔軟性ある義務履行を可能とする。

 - ・事業者に対し、義務の履行手段として、自分に適した削減手法を選んで自ら削減する方法だけでなく、排出枠の取引等により履行する方法も選べることとし、履行手段の多様性、柔軟性を高めている。
 - ・排出枠の取引により、景気動向等に応じた活動量の変化にも対応可能。
- 炭素への価格付けを通じて経済効率的に排出削減を促進する。

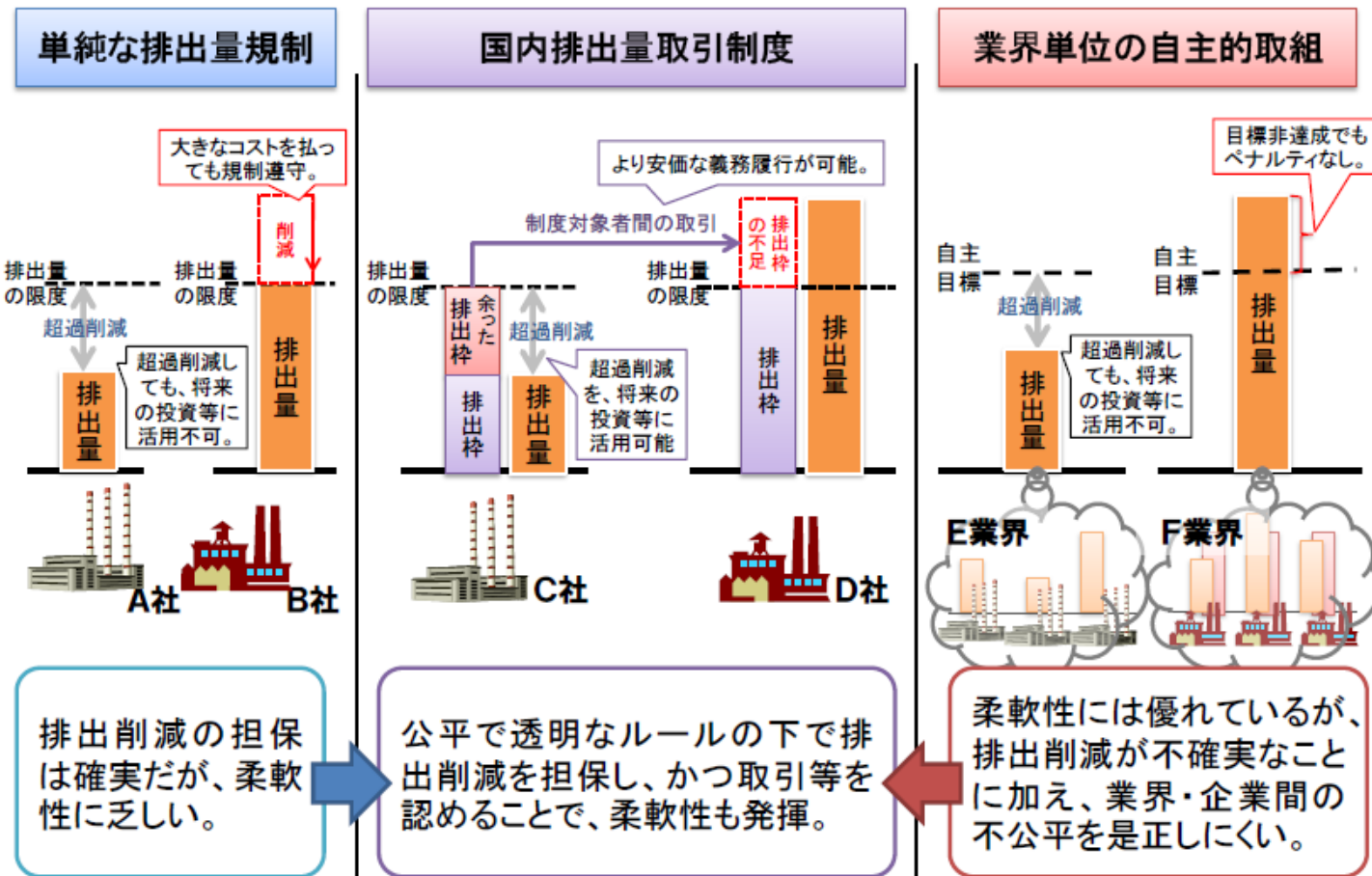
 - ・費用の少ない排出削減の取組が効率的に選択され、社会全体として効率的な排出削減が行われる。
 - ・より効率的な排出削減技術、低炭素型製品の需要も高まり、低炭素型の技術・製品の開発が促される。

● 排出枠の設定と取引のイメージ



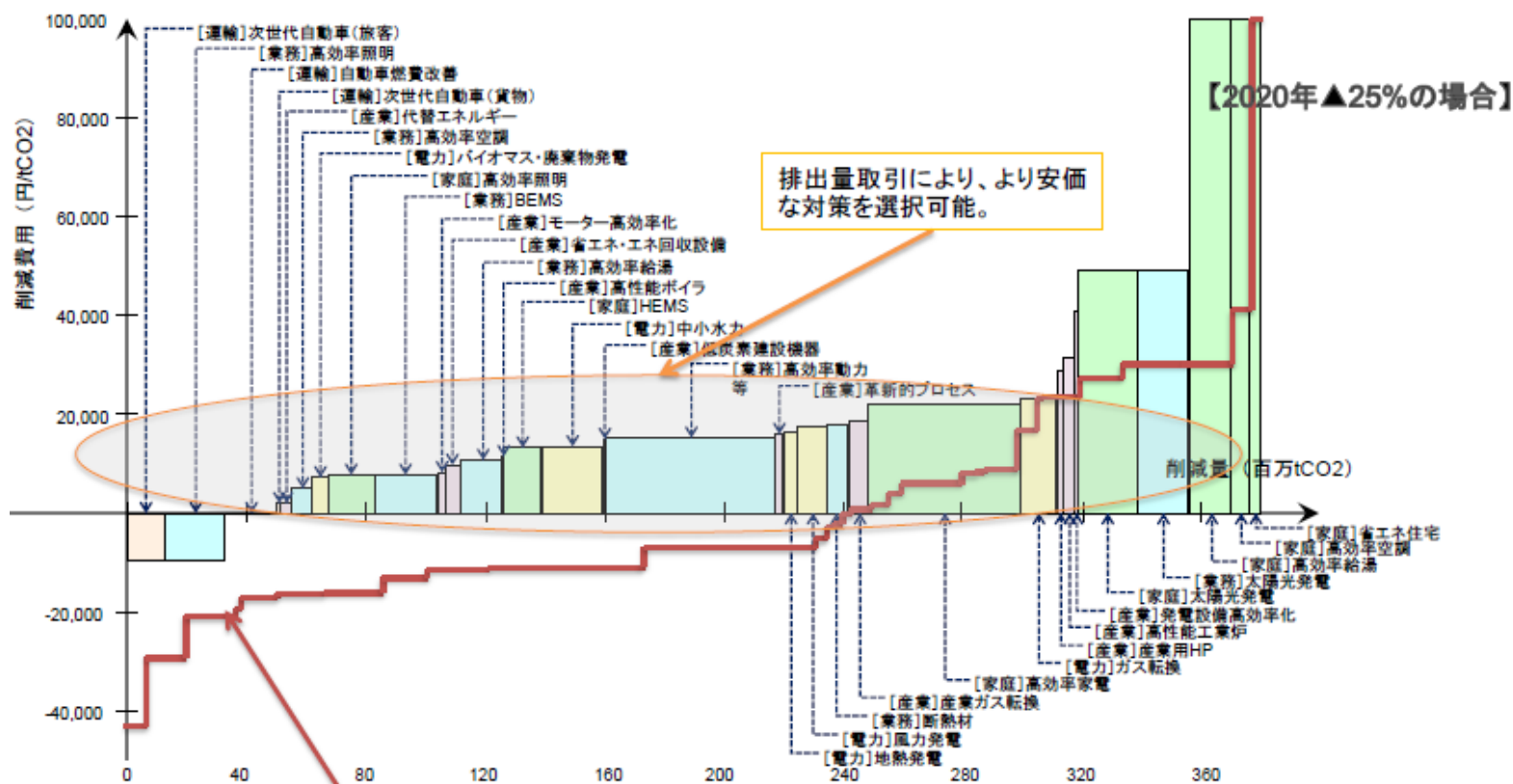
Benefits of emissions trading system (1)

Emissions trading is more efficient and effective than simple regulation and voluntary commitment.



Benefits of emissions trading system (2)

Emissions trading makes it possible to reduce emissions from sectors that can reduce emissions at lower cost.



政策の後押しなどによって長期の回収年を前提に投資が行われる場合(社会的割引率を用いた場合)

中央環境審議会地球環境部会中長期ロードマップ小委員会(第14回)(平成22年10月15日)資料から抜

Carbon tax vs. emissions trading

Both approaches are market-based, but they function differently. Emissions trading has an advantage over carbon tax, as it fixes the quantity of emissions, hence fixing environmental outcomes.

Carbon tax:

Carbon taxes are "priced-based" policy instruments. Taxes increase the prices of certain goods and services, thereby decreasing the quantity demanded, which is called the "price effect." Carbon taxes fix the marginal cost for carbon emissions and allow quantities emitted to adjust.

- ✓ A carbon tax would offer a broader scope for emissions reductions, including individuals.
- ✓ A system of tradable permits entails significant transaction costs, taxes involve little transaction cost, over all stages of their lifetime.
- ✓ Carbon taxes have dynamic efficiency advantages that trading lacks because taxes offer a permanent incentive to reduce emissions.
- ✓ Taxes are not susceptible to strategic behavior by firms or non-governmental organizations which may harm the contractual environment of the market.
- ✓ Emissions trading proposals are highly complicated and technical, unlike taxes which are an extremely familiar instrument to policymakers.

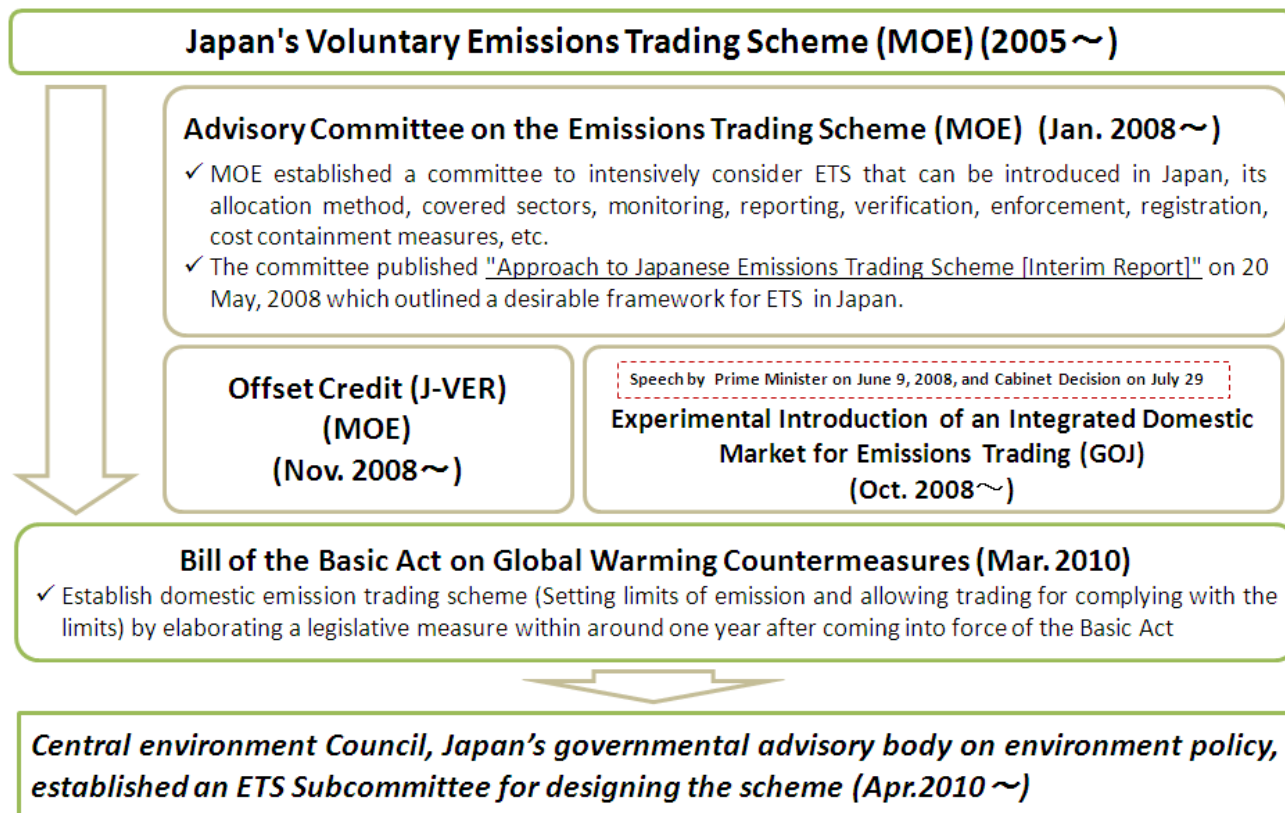
Emissions trading:

Tradable permits, emissions trading is considered a "quantity-based" policy instrument. They fix the total amount of carbon emitted and allow price levels to fluctuate according to market forces.

- ✓ A well functioning emissions trading system allows emissions reductions to take place wherever abatement costs are lowest, regardless of international borders.
- ✓ Emissions trading has the advantage of fixing a certain environmental outcome - the aggregate emissions levels are fixed, and companies/countries pay the market rate for the rights to pollute.
- ✓ Emissions trading is more appealing to private industry. By decreasing emissions, firms can actually profit by selling their excess greenhouse gas allowances.
- ✓ Emissions trading is better equipped than taxes to deal with all six GHGs included in the Kyoto Protocol and sinks (e.g. trees which absorb and store carbon) in one comprehensive strategy.
- ✓ Permits adjust automatically for inflation and external price shocks, while taxes do not.

History of discussions over emissions trading

The introduction of emissions trading has been discussed by the government over 10 years...



...but it has not been implemented due to the strong opposition from manufacturing companies.

Why not emissions trading?

Emissions trading has been avoided in Japan, because it is very effective in reducing GHG emissions!



新連載:国内政策を本音で語る(1)

なぜ排出量取引の導入を「排除」したいのか?

IGES 市場メカニズムグループ
ディレクター
二宮 康司



理論的には、環境税と排出量取引によって同等の政策的効果、つまりここでは温室効果ガス排出量の削減効果が得られることはどの教科書にも書いてあることである。排出量取引の導入によって所与の排出量削減という政策効果を実現できたとしたら、そこで取引される排出枠の価格は、その排出量削減の実現のために必要な環境税の税率によってもたらされる化石燃料価格の上昇分と同値となる。したがって、温室効果ガスの排出に対するコスト化という点では同じ帰結が導出される。

ところが、両者はその制度導入段階での政治的な障壁が異なる。排出削減を導出するために必要な化石燃料価格の上昇率をあらかじめ政治的に確定させなければならぬ税に対して、排出量取引では価格上昇が導入時には必ずしも明らかではなく事後的に顕在化するという違いである。

同じ排出量削減を政策的に実現するために、どちらが導入段階での障壁がより高いかと言えば、それは税である。例えば、現在の経済状況の中で、我が国において高い税率の環境税をこのタイミングであらたに創設することは政治的に不可能に近いと考えられる。しかし、税率を大きく下げれば状況は激変する。税率を下げてしまうことによって税導入の障壁は大幅に低下し、むしろ地球温暖化対策としての環境税の導入を成し遂げたという「実績」をアピールしたい政策側と、低い税率による実質的な「排出削減の実効性の低さ」を求めたい排出側のニーズとが絶妙にマッチし、税が積極的に好まれる状況が成立し得るのである。そして、その結果として、本来の政策目的であるはずの大幅な排出削減は実現しない。…

税導入については、低い税率によってその政策的効果を弱めてしまうことが極めて容易であり、むしろ政治的にはそうならざるを得ない、という現実が実は広く認識されており、排出削減効果に対するこの「税の実効性の低さ」が「排出量取引の実効性の高さ」との比較において排出者に好まれると考えられる。つまり、経済学的には等価の結果をもたらすはずの税と排出量取引だが、税の場合は低い税率の導入に留まざるを得ないという現実を多くは見透かしており、その意味において、税がセカンドベストな選択肢として支持され、排出量取引導入を排除するという行動に結びついているのではないだろうか。

こう考えてみると、税と比較して、排出量取引はその導入による排出量削減の「実効性の高さ」こそが実は特徴であると言える。そして、まさにそれ故に、その導入は忌み嫌われることになる。

(一部抜粋)

Why not emissions trading? – other reasons

Emissions trading is not favored by companies because it is operationally cumbersome! also companies are in fear of losing money from trading...



環境税と排出量取引制度を比較した場合、環境税が好まれる傾向が見られた。理由としては、第一に環境税は金額の予測が可能であり、取引に失敗するリスクが無いこと、第二に、環境税は消費税のように新しい国の税金として費用計上が出来、かつクレジットの取引に失敗した際に、株主含め利害関係者に対して説明をする責任がないこと、第三に、排出量取引の場合、取引価格の設定や社内での責任の所属等、解決しなくてはいけない事項が多々あり手間がかかるのに対し、環境税の場合、現状の経営スタイルを維持できること等が挙げられた。環境税の国境税調整は、貿易に依存せざるえない日本経済にとって海外からより大きな制約を課せられるきっかけを与えかねないと不評であり、日本はあくまでも海外(特に欧米)と協調した路線を取るべきという意見が大半であった。

...This is unique in Japan, and not common in Europe and North America.

Carbon leakage & international competitiveness

Japanese manufacturing companies are afraid of losing their competitiveness due to the introduction of carbon constraints...

Carbon leakage is likely to occur:

- if carbon costs are high and cannot be passed on consumers via product price increases
- if climate policy commitment is globally incomplete
- if production is exposed to international competition

Carbon leakage is less likely to occur:

- if carbon costs can be passed on consumers
- if climate policy commitment is globally complete
- if products are highly specialized

排出量取引と国際競争力

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 東北大学 盧向春

-現状と対策-

<要約>

本研究では、排出量取引制度を含む環境規制が企業活動に与える影響に関する先行研究の結果を整理すると同時に、EU 域内排出量取引制度 (EU ETS) などの分析に用いられたものと同じ方法論を用いて、日本における炭素集約産業および国際競争産業を、産業部門あるいは製品レベルで具体的に明らかにした。...

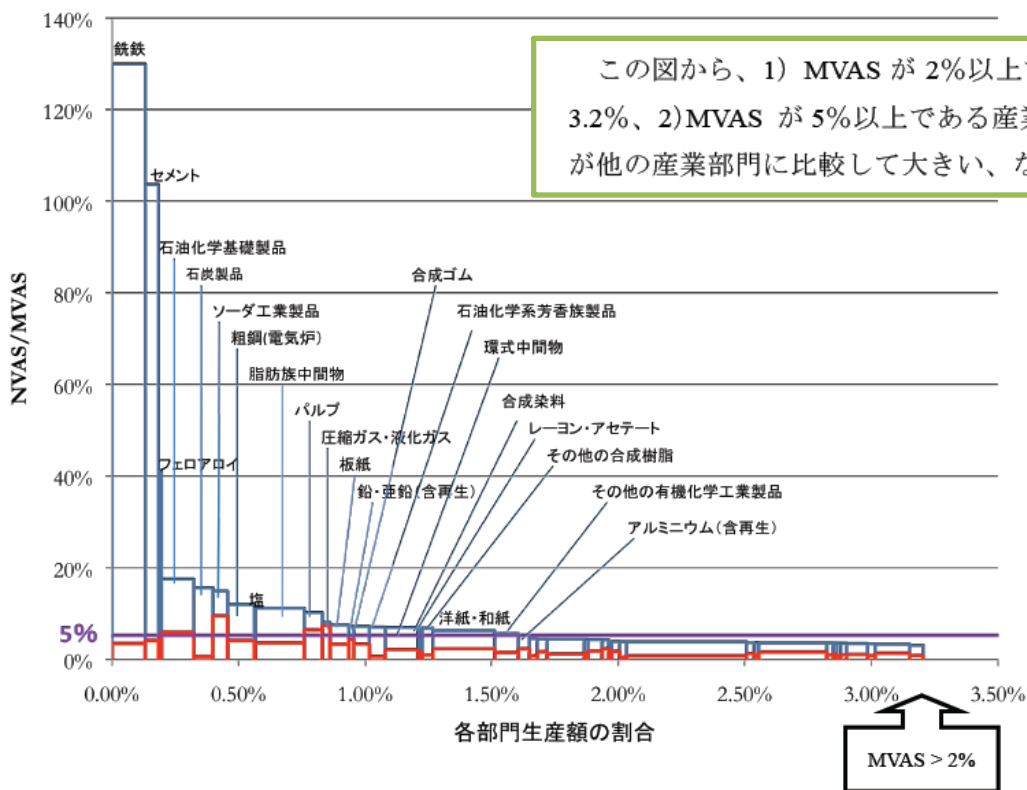
... 3) 日本においては、鉄鋼、セメント、石油化学、ソーダ工業、紙パルプなどの産業部門に属する製品の炭素集約度が高い、4) 日本国内製の熱延薄板の場合、排出枠が有償 (炭素価格 3000 円/t-CO₂) で割り当てられ、これが機会費用として 100% 製品価格に転嫁された場合でも、予想される製品価格変化、需給変化、そして貿易パターンの変化の度合いは、実際に過去 10 年間に起きた貿易パターンなどの変化に比較すれば小さく、国内製品の需要減少は、EU および米国の鉄鋼製品に関する同様の先行研究の結果とほぼ同じレベルである約-3%程度と推算される、5) 貿易相手国、特に中国でのエネルギー効率の改善やエネルギー価格の上昇を考慮すると、炭素制約の違いによる国際競争力喪失や炭素リーケージのリスクは過大評価されている可能性がある、などが明らかになった。

...but studies have shown that the negative impact to Japanese industries will be very small, and those that might suffer from carbon constraints can be protected by policy measures.

Carbon leakage & international competitiveness

Steel and cement industries may be affected due to their high levels of carbon intensity and trade exposure. But the overall impact to the Japanese economy is limited.

The projected impact of carbon constrains to Japanese industries



この図から、1) MVAS が 2%以上である産業部門の生産額の日本全体生産額に占める割合は約 3.2%、2) MVAS が 5%以上である産業部門は 17 産業部門、3) 鉄鉄³³、セメントの両部門の MVAS が他の産業部門に比較して大きい、などがわかる。

$$\text{炭素集約度} = \frac{\text{炭素制約の負担の大きさ}}{\text{産業部門のビジネスや利益の大きさ}}$$

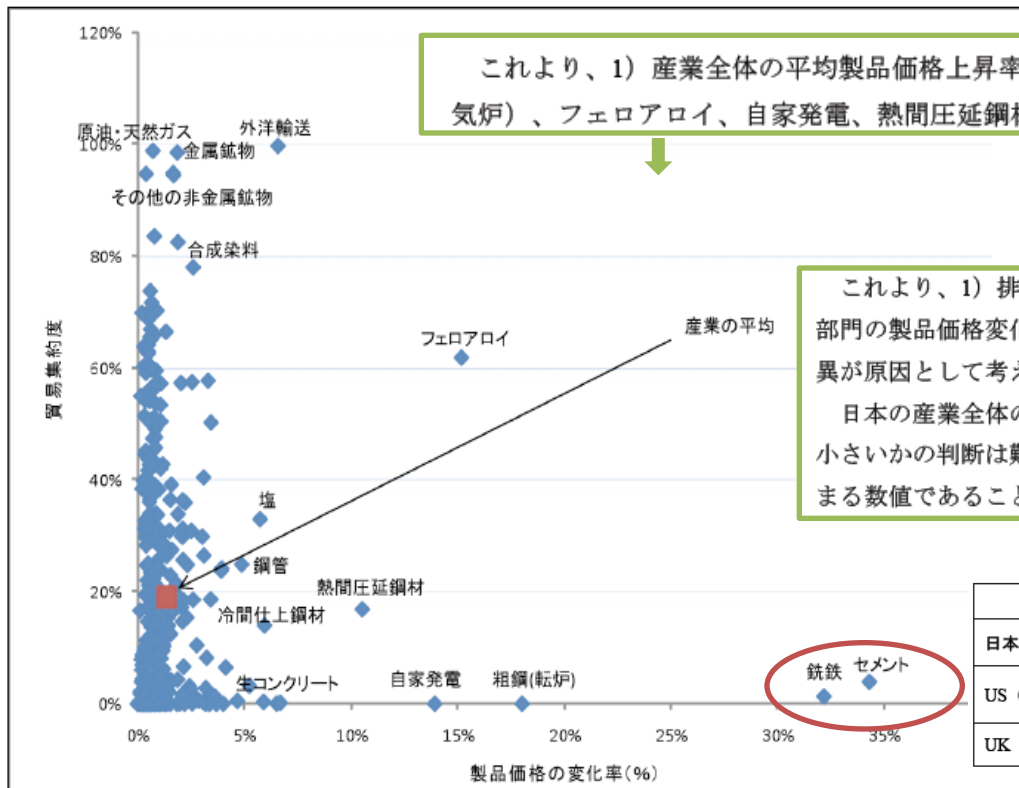
$$\approx \frac{\text{排出枠購入費用}}{\text{粗付加価値 (GVA : Gross Value Added)}}$$

MVAS : 炭素コスト増加分/粗付加価値
 NVAS : 電力コスト増加分/粗付加価値
 NVAS : Net Value Added at Stake
 MVAS : Maximum Value Added at Stake

Carbon leakage & international competitiveness

Projected price change is 1.25% on average, which is not particularly large compared with other countries, such as the US where the introduction of emissions trading is also discussed.

The projected price change after the introduction of carbon constraints



これより、1) 産業全体の平均製品価格上昇率は 1.25%である、2) セメント、鋳鉄、粗鋼（電気炉）、フェロアロイ、自家発電、熱間圧延鋼材などの上昇率が 10%を超える、などがわかる。

これより、1) 排出単価の違いを考慮しても、3 国に大きな差はない³⁵、2) 大部分の産業部門の製品価格変化率は 2%を超えない、3) 各国の差は、産業構造や省エネルギーの進捗度の差異が原因として考えられる、などがわかる。
日本の産業全体の平均である 1.25%が、製品価格の上昇率として客観的に大きいのか、あるいは小さいかの判断は難しい。しかし、少なくとも、過去における物価変動率などの範囲に十分収まる数値であることは確かである。

表 4.1. 製品価格上昇幅の国際比較

	産業連関表	排出単価	製品価格変化率（経済全体）
日本（本研究）	2000 年	3000 円/t-CO ₂	1.25%
US（Weber and Peters 2009）	2002 年	30 US\$/t-CO ₂	1.5%
UK（Stem 2007）	2003 年	70 £/t-CO ₂	<1%

Carbon leakage and international competitiveness

Industry-analysts consider that steel and chemical companies may be affected by carbon constraints, but firms with highly specialized technologies and products may transfer the cost increases to customers.



炭素リーケージについては、エネルギー、不動産、建設、運輸などの内需産業に関しては、基本的に起こらない。また国内企業に対するソリューション提供型ビジネスを展開するITサービス業、コスト高であっても国内生産の基本方針を掲げる半導体製造装置メーカー・太陽電池製造装置メーカー、また国内で資源循環型ビジネスを展開する段ボール業界では起こりづらい。しかし炭素制約の影響を強く受けるであろう鉄鋼、化学、自動車産業、また従前より海外OEM生産の進んでいる家電業界については、起こりえるとのことである。

価格転嫁については、類稀な技術を有し特に国内市場において高い競争力を誇る鉄鋼、燃料費調整制度の適用が可能なエネルギー業界や燃油サーチャージ制のある空運・海運・航空貨物業界、また一部プロジェクトではあるが原価スライド方式が導入されている建設業界、輸入製品の存在しない紙パ(段ボール)業界、またグローバル産業ではあるが輸送が困難であり現地生産・消費が基本であるガラス産業においては、概ね可能な様である。しかし自動車、化学、紙パ(印刷用紙)、太陽電池、家電、不動産、陸運(トラック輸送)業界においては、現在のようにデフレ傾向が強く、かつ海外企業との価格競争が強い状況下で原材料の価格上昇を最終的に消費者に転嫁することは、極めて難しいようである。

This is basically in line with the theory and findings by the previous studies. The key for Japanese companies to avoid the loss of international competitiveness is to have the specialty in their business!

(Ref.) Carbon leakage & international competitiveness

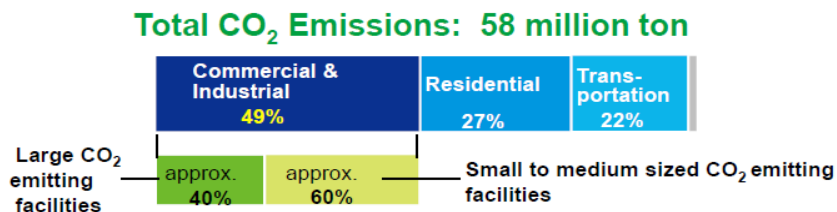
There are a variety of policy tools to alleviate carbon leakage.

カテゴリー	緩和策オプション名	概要	メリット	デメリット	採用国(制度)
1.炭素コスト負担削減	排出枠の無償割当	排出枠を無償で割当	実施が容易 (1国だけで可能)	効率性低下。行政コスト高い	EU、米国、豪州
	減税(生産コスト構造改善)	法人税や社会保障費などの引き下げ	実施が容易 (1国だけで可能)	効率性低下。行政コスト高い	豪州
	補助金(設備投資補助)	省エネ設備投資などへの補助	実施が容易 (1国だけで可能)	効率性低下。行政コスト高い	EU、米国、豪州
	国際オフセット	国際排出量取引やCDMの活用	実施が容易(既存のメカニズム)	CDMでは、地球全体の温室効果ガス排出削減は実現されない。資金の国庫流出というイメージがある	
2.炭素コスト差異削減	貿易措置	国境で炭素費用の差異を調整	非炭素制約国に対して炭素制約を実質的に課す。国内での排出量取引制度導入などの政治的受容性を高める	対象国や製品の決定、炭素含有量の計算などが困難。WTOルールや「共通だが差異のある責任」原則との整合性も課題	EU、米国が示唆
3.炭素コスト共通化	セクター・コミットメント	途上国の特定産業部門にコミットメント賦課	非炭素制約国に対して炭素制約を実質的に課す	途上国のコミットメントが必要。ベンチマークの数値の決定が困難	EUや日本が途上国に要求
	途上国の自主輸出規制	途上国政府が輸出税などを賦課	非炭素制約国に対して炭素制約を実質的に課す。自主的なものであるため、制裁を受ける、あるいは与えるというイメージは避けられる	途上国のコミットメントが必要。UNFCCCのもとでの持続的かつ法的拘束力があるコミットメントではないため、国際的に認知されにくい	中国
	消費ベース・アカウンティング	消費側に製品製造の際の温室効果ガス排出の責任を賦課。	非炭素制約国に対して炭素制約を実質的に課す。消費側の責任を明確にする	国際協調が必要。データ取得可能性が乏しい。現在のアカウンティングシステムを根本的に変える必要がある	研究者提案レベル。ただし、一般的にカーボン・フットプリントに対する認識は高まりつつある

Local to National - Tokyo's Cap & Trade Program

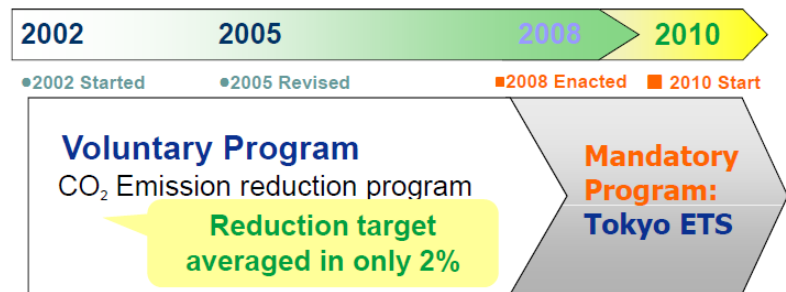
Tokyo Metropolitan Government introduced an emissions trading system, prior to the national government. Tokyo-ETS is the world's first "urban" cap & trade program to cover emissions from office buildings.

Tokyo CO₂ Footprint (2007)



- ✓ Japanese local governments have the authority to take legislative action when the national government does not have specific policies & measures. Using this opening, Tokyo introduced this innovative C&T program.
- ✓ Based on its experience of running Tokyo ETS, Tokyo now proposes the national government in designing the nation-wide ETS. This might be the way to go!

Tokyo-ETS: Program Development



Tokyo-ETS: Cap Coverage

The world's first urban cap and trade program to cover office buildings

1,300 facilities
 1,000 Commercial buildings
 300 Industrial facilities

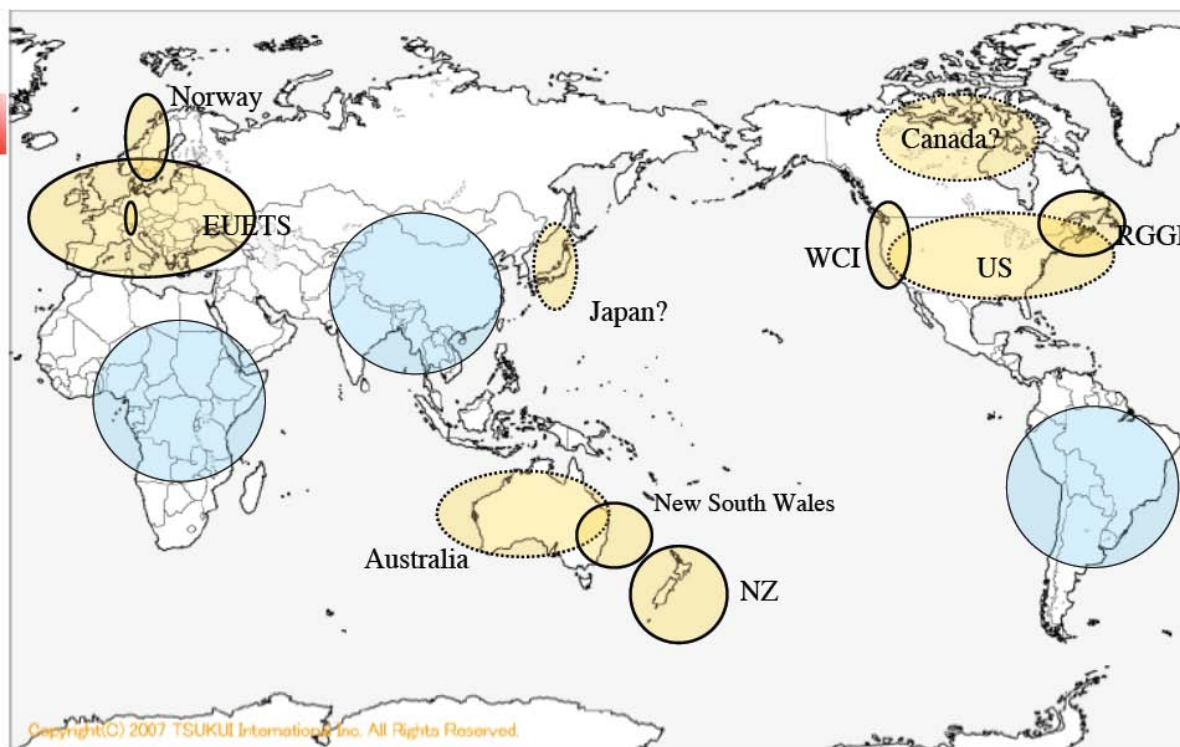
↔ 40% of commercial and industrial sectors' emissions

Coverage: Consumption of fuels, heat and electricity is 1,500 kiloliters or larger per year (crude oil equivalent)

Saitama Prefecture has announced that it will follow this Tokyo's cap & trade program starting from next April.

What is happening overseas? (1)

Emissions trading systems are becoming widely accepted internationally.



温暖化対策の国際的動向と国内排出量取引制度



地球温暖化対応のための経済的手法に関する研究会
2008.3.27

高村ゆかり (龍谷大学)
Yukari TAKAMURA (Ryukoku University, Japan)
e-mail: yukarit@law.ryukoku.ac.jp

排出量取引制度の拡大

EU排出量取引制度 (27カ国)

- EUの排出量の40-50%、約1万1500の大規模排出施設を対象
- ノルウェー、アイスランド、リヒテンシュタインの取引制度と連結

- Regional Greenhouse Gas Initiative (RGGI) (www.rggi.org) (Maine, Maryland, Massachusetts, New Jersey, New Yorkなど)

- Western Climate Initiative (WCI) (<http://www.westernclimateinitiative.org/>) (Arizona, British Columbia, California, Manitoba, New Mexico, Oregon, Washingtonなど)

- オーストラリア、ニュージーランドも

What is happening overseas? (2)

Emissions reductions may compliment economic growth.
What we need is the political will to make a transition to a low carbon economy!

電力買い取り、規制、環境税 欧州企業をエコに誘導

C₂O₂削減に経済界の反発は強い。メキシコ・カ
ンクンで開かれた国連気
候変動枠組み条約第十六
回締約国会議（COP
16）で、日本経団連は米
国や中国が参加しない現
在の京都議定書の単純延
長に反対する姿勢を示し
た。

では「経済成長の足か
せ」との心配は当たって
いるのか。国立環境研究
所や国際通貨基金（IM
F）のデータから、各国
の状況を計算してみた。

削減しながら成長を実
現した国は欧州に多い。
スウェーデンは京都議定
書基準年の九〇年から〇
八年までにC₂O₂を11・3
%減らし、GDPは47・
6%拡大した。ドイツは
22・3%、フランスは6
・5%、英国は19・0%
をそれぞれ削減。GDP
は英国が50%余り、他の
二国も35〜40%ほど成長
した。

一方の日本、C₂O₂は1
・8%増えたのに、GDP
は主要国中で最低水準
の24・4%増。米国やカ
ナダなど排出量、経済と
もに拡大した国もある。

平田氏は「欧州では
気候変動が国の存続や経
済へのリスクととらえて
いる」。経済対策からも
C₂O₂削減を進め、新たな
産業や雇用が生まれてい
るといふ。

その具体策の一つが電
力の固定価格買い取り制
度。エネルギー問題に詳
しい明治大講師の田中
信一郎氏は「排出量規制
と環境税でC₂O₂排出にコ
ストが掛かるため、企業
は削減しようとする設備投
資をし、コストが掛かっ
ても自然エネルギーによ
る電力を買った」と語
る。

普及すれば、一基に数千
億円かかる原発などの大
規模集中型から、小規模
・地域分散の自給自足に
近い発電に変わる。田中
氏は「施設整備は地元の
小規模業者が行い、地域
に仕事が増える」。

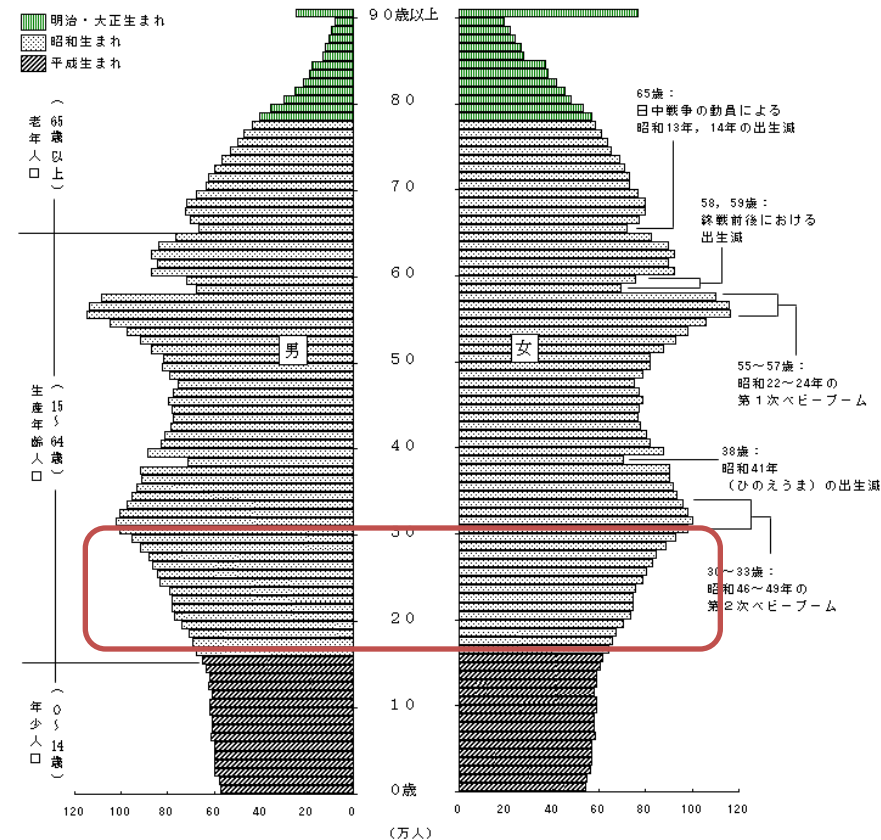
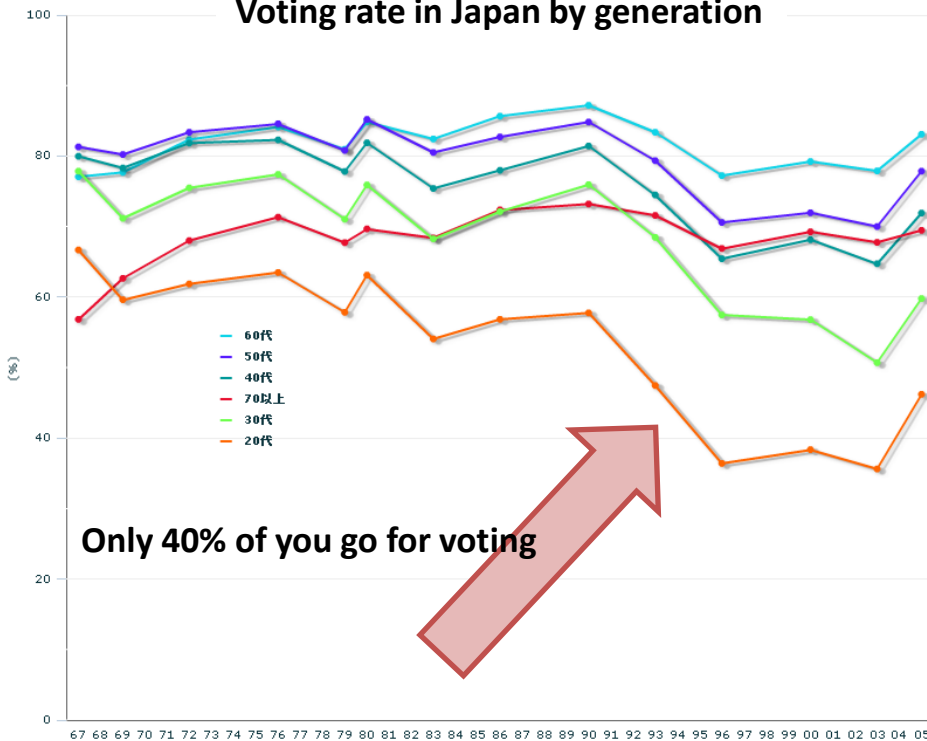
平田氏は「化石燃料は
枯渇しかかっており、自
然エネルギーへの転換は
不可避。設備投資や電力
料金のアップばかり語ら
れるが、化石燃料の輸入
や放射性廃棄物処理のコ
ストを抑えられる。この
先のことを考えて投資を
始める時期」と促す。

前出の飯田氏は成長限
界のまやかしをこう糺し
た。「ドイツではC₂O₂削
減量が年間一・二億トン、
産業経済効果に四兆円、
雇用効果も三十四万人な
ど、自然エネルギーの分
野が生み出したものは大
きい。日本の産業界も短
期的なコスト増にとらわ
れず、自然エネルギー導
入に取り組みべきだ」

What's missing from the Japanese politics?

Feedback from **YOU!**

Voting rate in Japan by generation



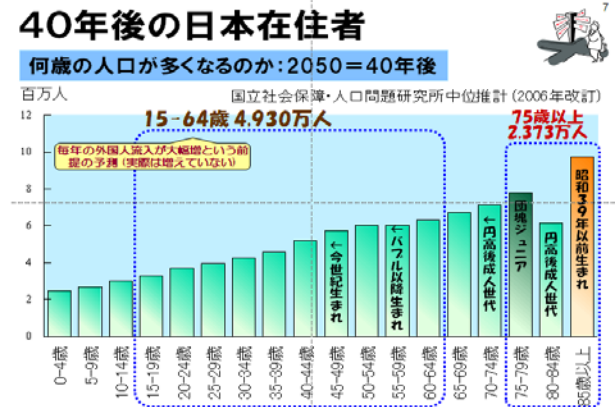
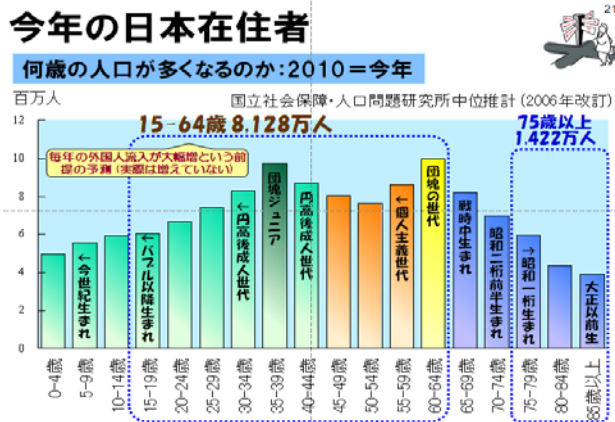
Japanese politicians do not have incentives to act for young people...

Demographics forecast in Japan

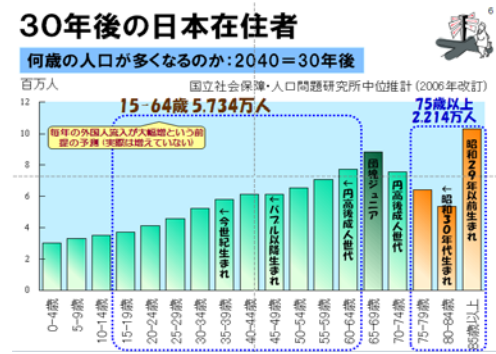
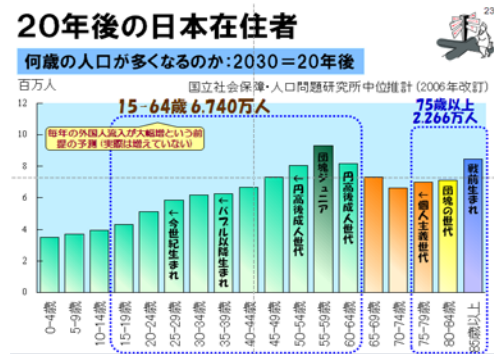
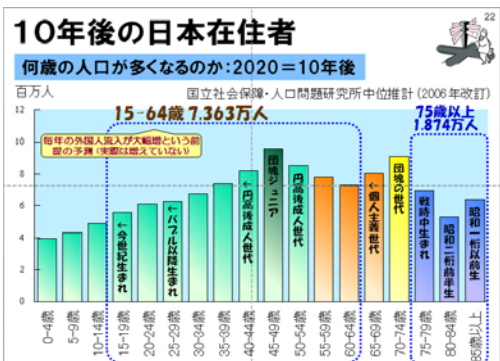
We are facing a massive demographic change, which forces us to change our socio-economic systems...

「暮らしを良くする」
経済は「人口波」で動く

徳谷浩介
人口問題研究センター長



...



... **YOU** should go for voting, so you alleviate the burden on your generation.

Alternative path? – Voluntary carbon offset

Voluntary carbon offset may be a more efficient way of reducing emissions internationally, as the progress of discussions over the compliance market has been very slow...

Pros:

1. The voluntary market enables those in unregulated sectors or countries that have not ratified Kyoto Protocol, such as the US, to offset their emissions.
2. Because the voluntary market is not subject to the same level of oversight, management, and regulation as the compliance market, project developers may implement projects more flexibly that might otherwise not be viable (e.g. projects that are too small or too disaggregated).
3. By decreasing the costs of emissions reductions, the speed of carbon offsetting and trading can be accelerated.

Cons:

Lack of regulation

- ✓ Several certification standards exist. However, no single standard governs the carbon offsetting. This causes a lot of variations in calculations, and some offset providers have been criticized that their carbon reduction claims are exaggerated or misleading. There are widespread instances of people and organizations buying worthless credits that do not yield any carbon emissions reductions have happened. Furthermore, there is a shortage of verification, making it difficult for buyers to assess the true value of carbon credits.

Popular carbon offset project types :

1. Renewable energy, such as wind farms, biomass energy, hydroelectric dams
2. Energy efficiency projects
3. Destruction of industrial pollutants or agricultural byproducts
4. Destruction of landfill methane
5. Forestry projects.

Carbon Offset Practice – Airline Industry



British Airways introduced a voluntary passenger carbon offset scheme in 2005, as a pioneer in the airline industry

Climate change - carbon offsetting

British Airways was the first airline to introduce a voluntary passenger carbon offset scheme in 2005 and were also the first airline to achieve the UK Governments Quality of Assurance.

We strive to make it as easy as possible for you to offset the impact of your journey when buying a ticket with us on ba.com.

Contributions are automatically calculated based on the volume of carbon dioxide your flight produces and the cost of carbon per tonne at the time of your booking. Payments can be made safely and securely via credit or debit card, with the money raised going to help fund hydro-electric power plants and wind farms around the world.

These projects are certified Carbon Emission Reduction projects and as well as offsetting your carbon they also have health and social benefits. So by making a contribution you can have a positive effect on communities as well as balancing the emissions from your flight.



Carbon Offset Practice – Airline Industry



Virgin Atlantic works with myclimate to offer a carbon offset option to customers.



OUR GOLD STANDARD CARBON OFFSET SCHEME

There are lots of things you can do to reduce your carbon footprint other than carbon offsetting - cycling or using public transport, insulating your home, turning your heating down or using energy efficient light bulbs.

For those emissions you cannot reduce, you can try carbon offsetting with our Gold Standard Offset Scheme.

Upon submitting your details for this scheme, you will be referred to myclimate's external website, where your carbon offset donation will be processed. Please note, Virgin Atlantic Airways is not responsible for the content of external internet sites. If you experience any issues whilst on myclimate's website please [contact myclimate by clicking here](#).

You can also carbon offset your emissions onboard with us, when you purchase your duty free goods!

ENTER YOUR FLIGHT DETAILS TO OFFSET

Round Trip One Way

Departing To

Cabin Passengers



Carbon offset projects

myclimate develops and supports projects around the world that directly reduce greenhouse gases and in doing so directly protect the climate. myclimate carbon offset projects fulfil the highest standards (CDM, Gold Standard). They not only reduce climate-impacting emissions, but also contribute to sustainable development in the project regions.



- Water
- Sun
- Biomass/Biogas
- Wind
- Energy efficiency
- Methane reductions

Carbon Offset Practice – Airline Industry



ANA launched a carbon offset program using J-VER credits



ANA Carbon Offset Program

ANA Group launched its ANA Carbon Offset Program on October 1, 2009, for all domestic flights, as one of its customer-participatory environmental activities.

This is a joint program with [more trees](#), founded by Japanese musician Ryuichi Sakamoto. Of the many efforts ANA Group makes for the reduction of CO2 emissions, this program is one that customers can join in at any time, by calculating their own emission amount for each domestic flight trip they made (*1). Payments are made by credit card, and customers can offset emissions of past trips as well as planned future trips.

Carbon offset payments made by customers will be used as forest absorption credit from Japanese forests (J-VER) (*2), will help grow and rejuvenate Japanese forests, and will contribute to the prevention of global warming.

Participate in the Carbon Offset Program

Depart from

Arrive at

Depart on

Number of Passengers

One-way Round-trip

[Calculate CO2 Emission Carbon Offset Amount](#)

* Carbon offsets can only be purchased by credit card.

Carbon Offset Practice – Hotel Industry

Six Senses started charging a carbon tax to customers to offset customers' flight-related emissions. This practice has been awarded by the World Travel & Tourism

www.tourismfortomorrow.com

WORLD TRAVEL & TOURISM COUNCIL (2009)



SIX SENSES RESORTS & SPAS,
THAILAND & GLOBAL

GLOBAL TOURISM BUSINESS AWARD

FINALIST 2007 & WINNER 2008



For example, at Soneva Fushi and Soneva Gili, two small island properties located in the Maldives, motorised traffic is excluded on the islands, with 75% of the islands left undeveloped and forested and bike paths extensively wandering under the tree cover. Each guest and staff member is issued with a bicycle, and all services are delivered via bicycle or trolley.

Under an innovative and market-leading policy, all guests at Six Senses' resorts are now levied a 2% 'carbon tax' to neutralise the carbon emissions created through travel to the destination and while staying at the destination. Six Senses' staff are well cared for with a comprehensive staff incentive scheme, including sharing in a percentage of resort revenues. In addition, capacity-building training, including for environmental awareness, and the opportunity to work at Soneva resorts globally, are also offered to resort staff. At Soneva Fushi, the majority of the staff are local and live on site, with opportunities for career development and enhancement. Many Maldivians hold supervisory and senior guest relations positions.

Six Senses Resorts & Spas Carbon Offset Programme

Six Senses Carbon Offset Programme, with the assistance of Converging World, is designed to offset all guest flight carbon emissions in addition to all carbon emissions arising from Six Senses resort operations and host travel. The non-profit programme offsets carbon emissions by replacing coal fired power plants with Suzlon® wind turbines in south India. Funds generated from this sustainable green energy are used to implement various social and environmental projects.

Under an innovative and market-leading policy, all guests at Six Senses' resorts are now levied a 2% 'carbon tax' to neutralise the carbon emissions created through travel to the destination and while staying at the destination. Six Senses' staff are well cared for with a comprehensive staff incentive scheme, including sharing in a percentage of resort revenues. In addition, capacity-building training, including for environmental awareness, and the opportunity to work at Soneva resorts globally, are also offered to resort staff. At Soneva Fushi, the majority of the staff are local and live on site, with opportunities for career development and enhancement. Many Maldivians hold supervisory and senior guest relations positions.

CASE STUDY

Six Senses with its brand name Soneva, a resort and spa management and development company established in 1995, is headquartered in Bangkok, Thailand. It has ten resorts and 16 spas worldwide and host approximately 400,000 guests per year. Its mission statement, 'To create innovative and enriching experiences in a sustainable environment', establishes environmental responsibility as a core value, and has led Six Senses to create its Social and Environmental Programme as a key operating standard across the company.

Based at head office, the Social and Environment Conscience Programme



Carbon Offset Practice – Hotel Industry



Marriott Hotels offsets its emissions through protection of rainforest.



MARRIOTT INTERNATIONAL INC, USA & GLOBAL
 GLOBAL TOURISM BUSINESS AWARD
 WINNER 2009



In 2007, Marriott began a partnership with Conservation International to map the company’s carbon footprint and develop a five-point environmental strategy for full sustainability. It includes:

- Carbon offsets through the protection of rainforest
- Further reductions in fuel and water consumption – by 25% per available room over the next ten years – as well as the installation of solar power in up to 40 hotels by 2017
- Engaging the company’s top 40 vendors to supply greener products across 12 categories of Marriott’s US\$10 billion supply chain
- Creation of green construction standards for hotel developers to achieve LEED certification from the US Green Building Council
- Educating and inspiring company employees and guests to support the environment, including through green meetings and events.

The plan is part of Marriott’s long-term system-wide environmental policy and focuses on efforts to reduce and offset Marriott’s global footprint, which was calculated at 3 million metric tons of CO₂ emissions annually – or 69.5 pounds per available room. The calculation was certified in autumn 2008 to Climate, Community and Biodiversity (CCB) Standards.

Marriott has a company Global Green Council in place to advance its sustainability initiatives. Nowhere is this better demonstrated than in its US\$2 million investment in the Amazonas Sustainable Foundation which, together with the State of Amazonas in Brazil, helped to establish, monitor and enforce the protection of 1.4 million acres (589,000 hectares) of endangered rainforest in the Juma Sustainable Development Reserve. The Juma Project acts as a sink for carbon emissions through the avoided deforestation of old growth rainforest until 2050. Additional benefits include forest conservation, an improved quality of life for the local population, and biodiversity protection.

Thank you!

More information on emissions trading and carbon offset:
http://www.env.go.jp/en/earth/ets/mkt_mech.html