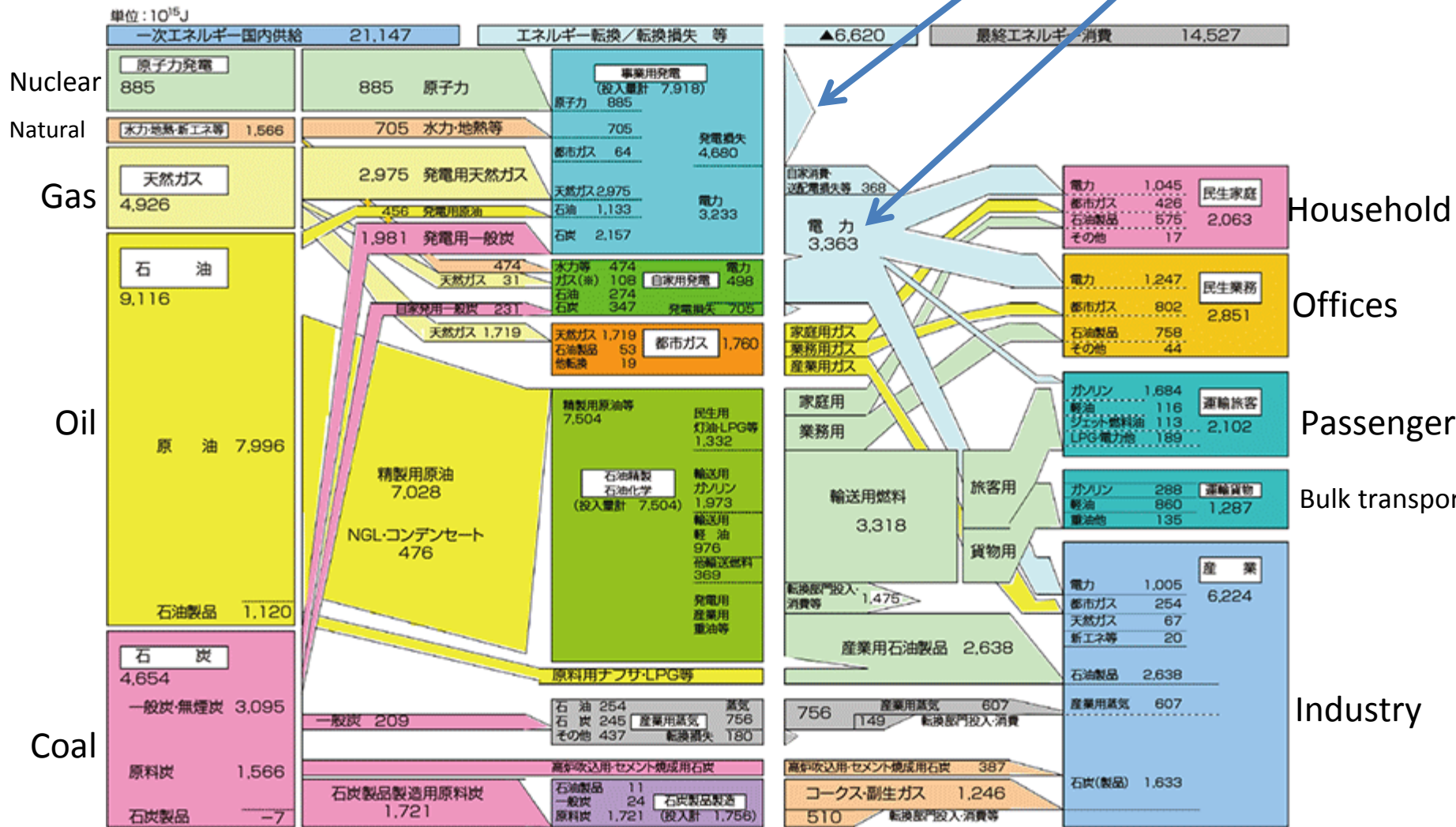


PECC International Project
Energy Transition and New Economic Models 2013-2014
Seminar 1. Energy Transition:
Making the most out of available resources
November 7-8, 2013 Victoria, BC, Canada

Pricing of carbon can be a cost-effective alternative strategy for energy transition as it makes the most out of “market”, our most commonly available economic tool...

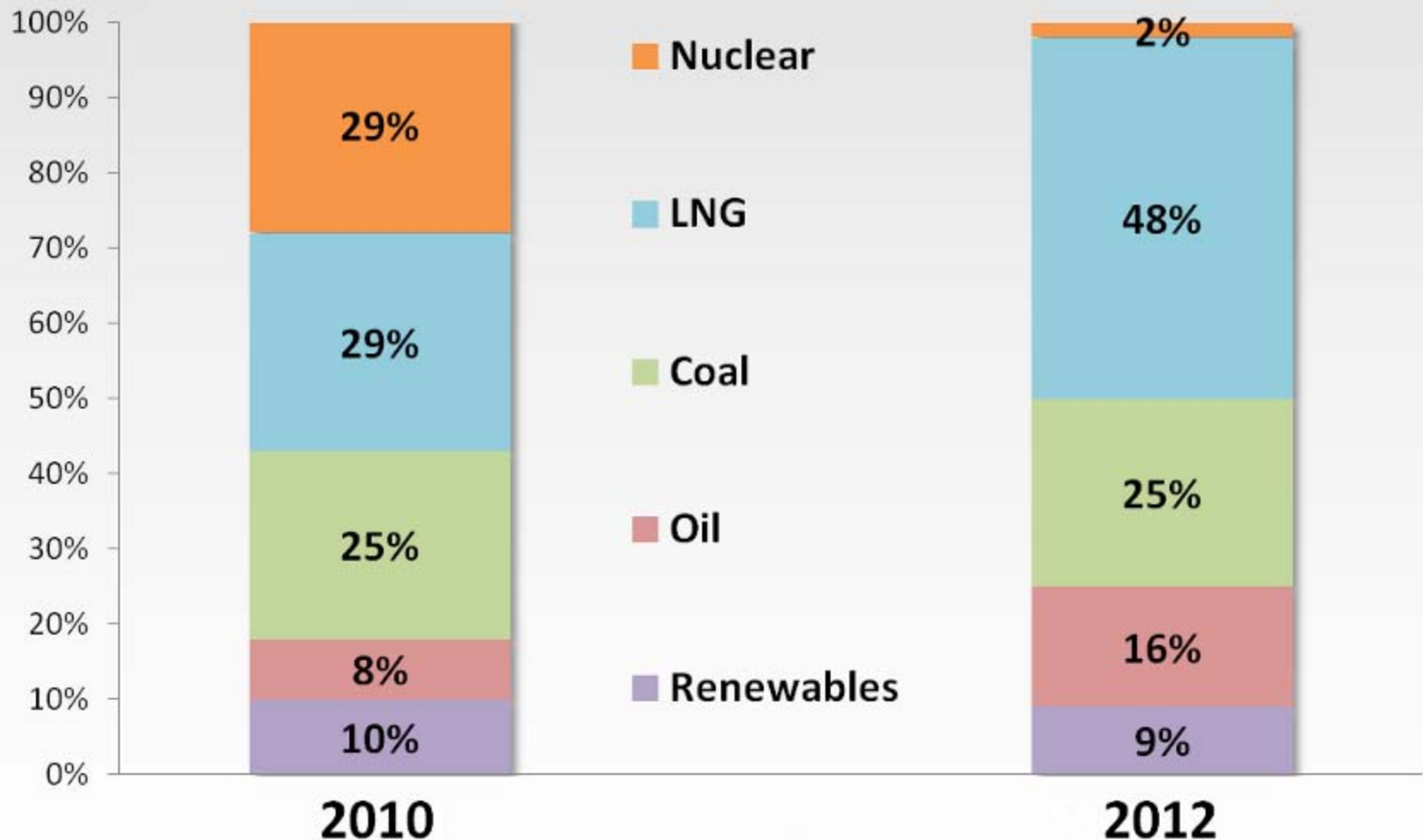
Mutsuyoshi Nishimura
Visiting Research Fellow
Japan Institute of International affairs (JIIA)
nshmr6@gmail.com

Japan's energy flow before Fukushima



Energy mix in Japan before and after Fukushima

Most nuclear power has remained offline after the March 2011 earthquake and tsunami at the Fukushima nuclear power plant, awaiting new safety rules and government approval.



Please refer to graphs below....that show the enormity of the challenge in transiting energy system...

ESTIMATED US ENERGY USE IN 2008

<http://www.netl.doe.gov/energy-analyses/pubs/MajorEnergySources.pdf>

“Feasibility of GHG emissions phase-out by mid-century”

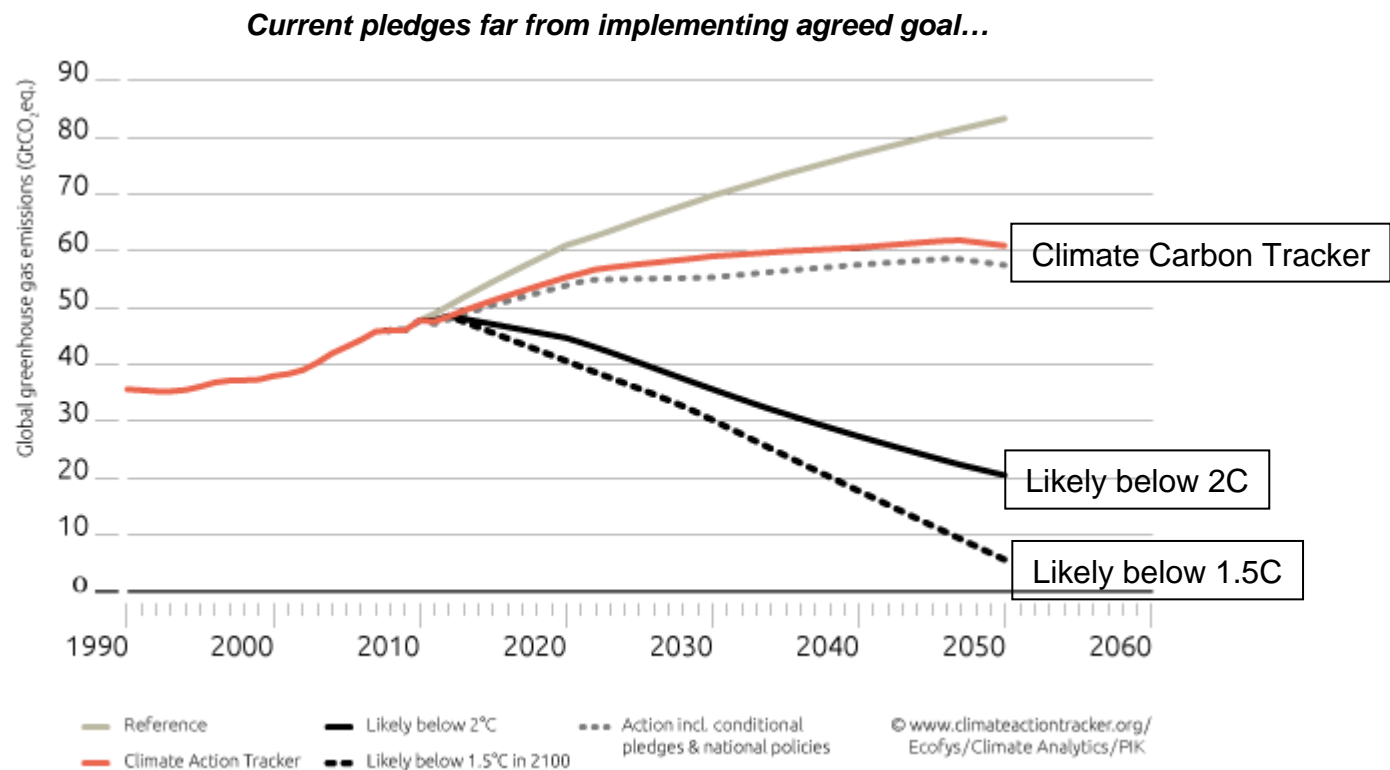
Page 2, Figure 1

“Global GHG emissions in 2010 by source The total emissions are estimated at 48.6 GtCO₂. Source”: Analysis by Ecofys [ASN, 2013].

<http://www.ecofys.com/en/publication/feasibility-of-ghg-emissions-phase-out-by-mid-century/>

Energy Transition is no easy job... Enormity of the Challenge...giga-ton gap and only 40 years left....

Anyone who's seen this must ask..."Can we transit to low carbon economy and fill the gap just in time?"



Energy Transition

Enormity of the challenge: what we have to do is to.....

1. talk at scale,
2. talk in timeline,
3. do it most cost-effectively and harm no competitiveness
4. bring poorer countries into the march towards low-carbon sustainable growth

What should be the strategies? What should be the drivers?

Government-centric Command-and-Controlling Strategy ...governments investing, Governments leveraging private investments, commanding, regulating, setting standards, community taking leadership, spreading awareness, infusing wisdom of savings, FIT, etc. etc.,

Polluters-focused Pricing Strategy ...putting price on emissions, letting the price go up forcing all polluters (firms, you and me) shift from carbon consumption...

Are we really sure we can shift to low-carbon energy system by keep doing current government-centric command-and-controlling strategies?

Energy Transition

**“It’s possible to phase-out GHG emissions by mid-century...
with currently available technologies”
so says the latest ECOFYS paper.... But how?**

This is what it says...

Is it possible to phase out greenhouse gas emissions by 2050?

It is possible to almost entirely phase out net greenhouse gas (GHG) emissions by the middle of the century. While more research is needed, existing scenarios show that it is technically and economically feasible to reduce emissions to zero for roughly 90% of current sources of GHG emissions with technological options that are available today and in the near future.

A nearly complete phase-out of net emissions by 2050 is possible with additional innovation and offsetting residual emissions by sinks. A net phase-out by 2050 would ensure a very high likelihood of meeting the agreed 2 ° C goal and a 50% chance of staying below 1.5 ° C by the end of the century.

Excerpts from Executive Summary

“Feasibility of GHG emissions phase-out by mid-century” ECOFYS 2 October 2013

<http://www.ecofys.com/files/files/ecofys-2013-feasibility-ghg-phase-out-2050.pdf>

Pricing is needed for the GHG phase-out to be realized if such phase-out is feasible by current technologies...

What achieves such phase-out cost-effectively, command-and-controlling or pricing?

Command-and-controlling strategy is:

- costly as it does not involve polluters
- not sure, it is do-your-best strategy at best...**it's not systematic, it's not target achieving**
- all actions help, but **not capable to ensure for all needed investments to come forward**

Governments controlling carbon economy sits odd when all other economies are free market system

Market with the carbon budget for targets like 2C is capable to:

- achieve the target most cost-effectively
- trigger all needed investments,
- mobilize all polluters (firms, you and me) towards low-carbon economy

Why market and pricing are needed for energy transition? --1

Here is what Prof. W. Nordhaus of Yale has to say...

*...Emissions of carbon dioxide are externalities, i.e., social consequences that are not accounted for in the market place. They are market failures because people do not pay for the current and future costs of their emissions. **If economics provides a single bottom line for policy, it is that we need to correct this market failure by ensuring that all people, everywhere, and for the indefinite future, face a market price for the use of carbon that reflects the social costs of their activities...***

http://nordhaus.econ.yale.edu/documents/BAS_Nordhaus_Jan11.pdf

Here is what Rachel Kyte of the World Bank has to say...

*...Finally, if carbon is the problem, which it is ... **then we should be putting a price on something which is bad.** And if we put a price on it, one has to wonder, within the economy, how much you want to have an exposure to a commodity which is going to have a significant price to it at some point in the near- to medium-term future.*

<http://www.nationaljournal.com/energy/why-the-world-bank-is-taking-on-climate-change-20130812>

Here is what OECD has to say most recently,

*...**“Carbon pricing most cost-effective way to reduce carbon emissions, says OECD” Study finds cost of alternatives such as feed-in tariffs, industry regulation and subsidies can be ‘substantially higher’.***

The Guardian 5 November 2013

<http://www.theguardian.com/environment/2013/nov/05/carbon-pricing-best-way-to-reduce-carbon-emissions>

Why market and pricing are needed for energy transition?--2

Here is what ADB says most recently...

“...East Asia needs to shift toward a model of economic growth focused on low carbon emissions and more efficient use of resources. The region is moving in this direction by establishing targets for improvements in energy efficiency and making investments in clean energy. Additional investments will be required to ensure that infrastructure and communities are resilient to future climate risks.

*Market arrangements to price carbon, via either carbon trading or carbon taxes, remain underdeveloped. The PRC, Japan, and the Republic of Korea have made some initial progress in this regard, but much remains to be done. **Without a combination of price signals and incentives it will be difficult to stimulate the investment that is required to underpin the transition to low-carbon options in sectors such as energy, manufacturing, and transport.***

The benefits from regional cooperation in mitigation programs are likely to be substantial. In all of the mitigation scenarios examined, the overall cost of reducing emissions can be reduced by 25% or more if emissions targets are pooled via a regional trading scheme or through adoption of a uniform carbon price”.

“Economics of Climate Change in East Asia”

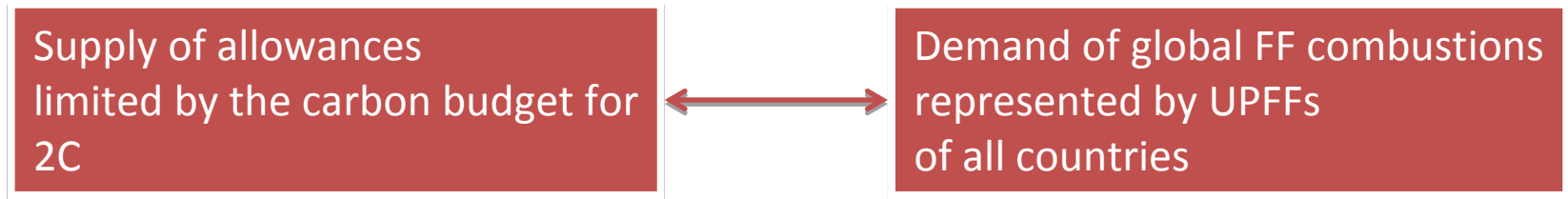
<http://www.adb.org/sites/default/files/pub/2013/economics-climate-change-east-asia.pdf>

Energy transition...

Upstream market and carbon pricing achieving energy transition

What is upstream carbon market?

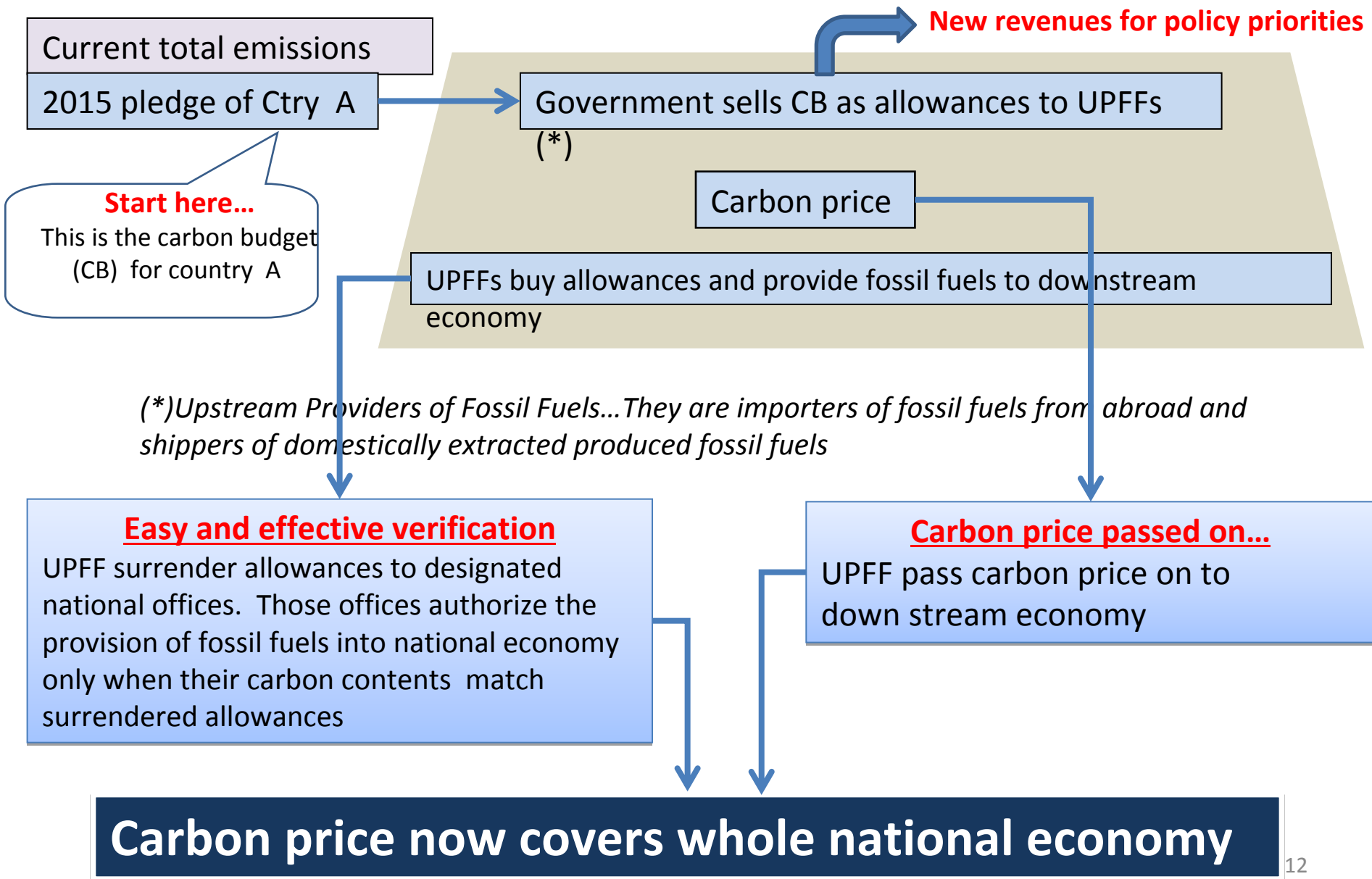
- Cap globally with the carbon budget for 2C (achieving e.g. 2C)
- Sell the budget to UPFFs (importers of foreign FF and extractors of national FF)
- Carbon costs passed on to the downstream economy
(an uniform carbon price in the whole world economy)
- Sales revenues to be used for countries and people in need



Then, rising carbon price...

- one and universal, not fragmentary
- predictable as a long-term price signal
- provokes right & needed technology investment without interventions
- provokes shift to low-carbon production and consumption

What is National Upstream Carbon Market?



Global Upstream Carbon Market

A Game Change: Which is more target-consistent?

**Science-Based Global
Cap & global market**

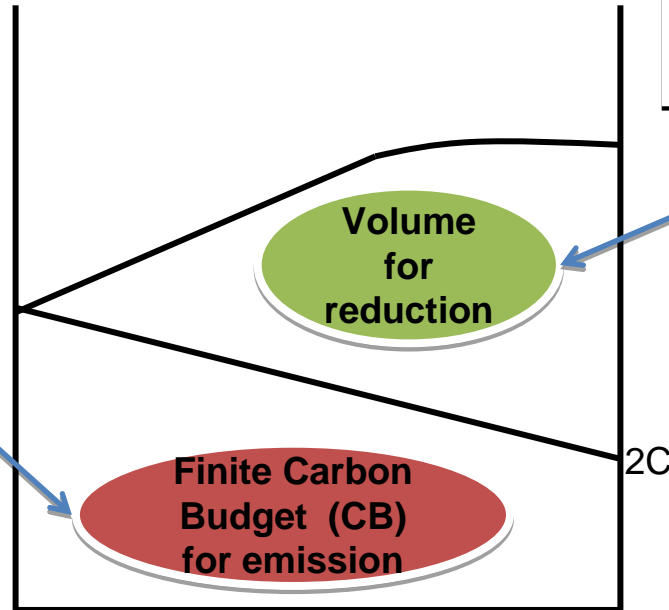
Game change...

KP :
Arbitrary national caps
It is a reducing formula

**New game is emitting
formula**

COP will:

- cap globally with CB
- make CB new finite commodity
- own and sell them globally to UPFFs
- get new revenues from sales of allowances



New built-in funding creating a major new source of climate financing for:

- (i) Developing countries... (basic energy services, adaptation, low-carbon growth investments, capacity building etc. etc.)
- (ii) basic international R&D such as CCS
- (iii) attending issues like locked-in infrastructures of all countries...

If a drastic game change is called for, here's a candidate..

If in case 2015 pledges do not achieve adopted targets...

Global Upstream Market will achieve targets most cost-effectively and give rise to a new major source of climate financing

- COP caps globally for 2°C and puts property right on the capped budget
- COP sells by auction allowances to upstream providers of fossil fuels and gets new revenues
- Let upstream providers pass carbon price on to downstream economies
- COP sends sales revenues to countries in need for their adaptation, low carbon sustainable growth and solve issues
- No national cap, Easy & effective verification, Minimum operation costs...*

All polluters pay globally the same price for using the finite global commons and shift their lifestyles...

Carbon price is now “throughout the global economy”.

As “The Carbon Price Communique” ...A Call from Business for a Clear, Transparent and Robust Price on Carbon...calls for...

PECC International Project

Energy Transition and New Economic Models 2013-2014

Seminar 1. Energy Transition: Making the most out of available resources

Tasks ahead...

- build energy flow chart of the PECC countries
...national as well as integrated
- build a compendium of policies that succeeded (and failed) to energy transition
in the PECC region
- PECC could provide a useful service by mainstream pricing, amongst others,
in energy transition efforts in the PECC countries particularly in view of the recent
ADB analysis (above)

Basic question remains though...*is it possible to achieve energy transition without capping global emissions? Is energy transition just improving energy use or achieving low-carbon energy system by realizing targets like 2C?*