

# Can Large Dams be Part of a Green Economy ?

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# Scope of the presentation

1. Green Growth (GG) and Green Economy (GE) frameworks
2. Hydropower and Green Growth (global GHG emissions)
3. Good practice on improving social and environmental outcomes of dams
4. Constraints to delivering GE outcomes

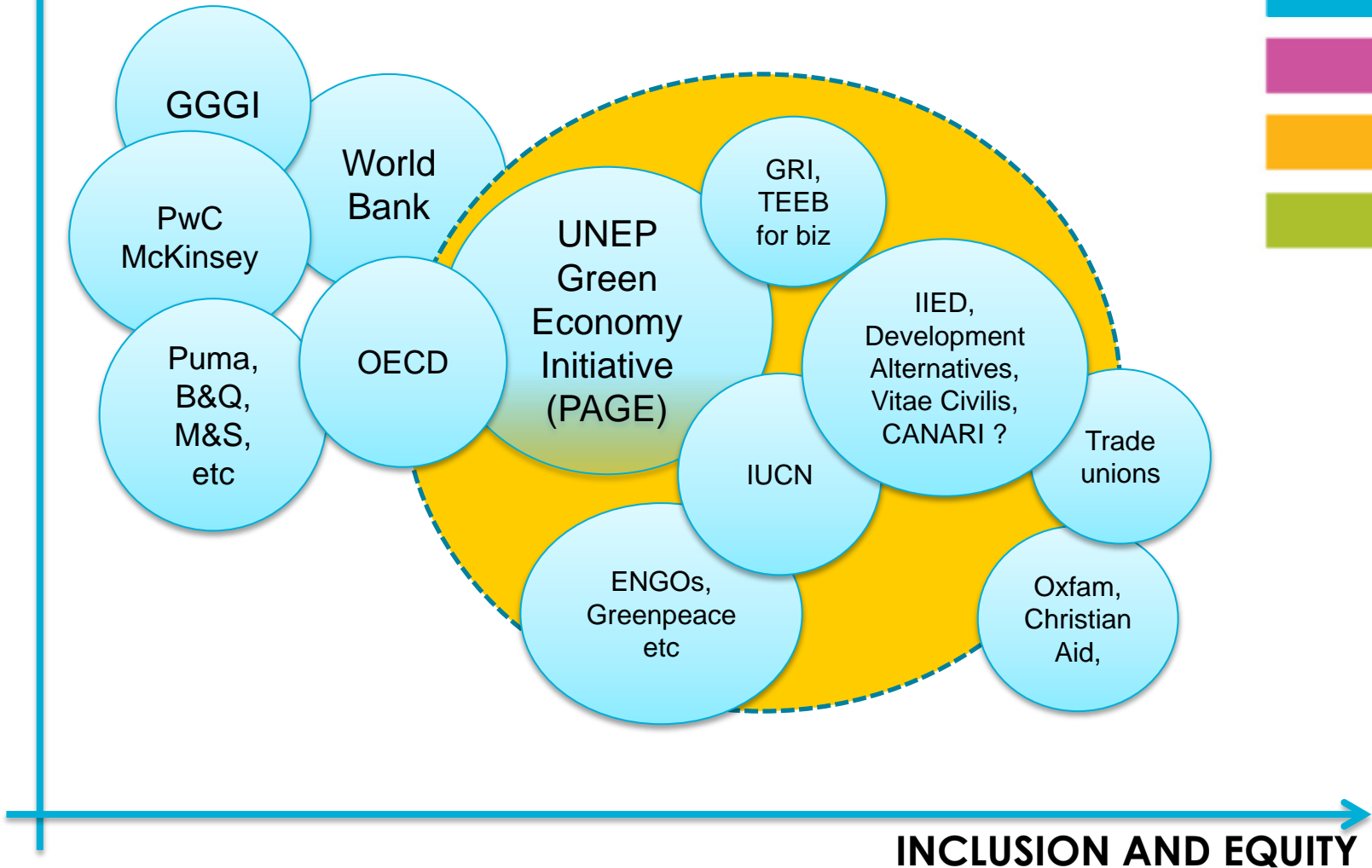
# GG/GE -Diverging emphases?

	'Green growth'	'Green economy'
Policy space	Mainstream economy & finance	SD and environment policy
Aim	New 'green' sources of growth – investing in env goods and services	Economic conditions for SD – transforming whole economy
Driver	GGGI, McKinsey, etc	UNEP, GE Coalition members
Focus	GHG abatement Big clean technology investment Social approach a separate issue	Natural asset valuation/investment Protecting ecological boundaries Social equity and livelihoods
Strategy	Tactical, aimed at engaging elites	Comprehensive, aimed at inclusion
Demand	Business/ministerial interest in competitiveness	Poorer actors and civil society interest in soc/env/econ balance
Impact	Could be significant – but partial?	Marginal to date – but potentially transformative?

GROWTH

# Diverse 'green' positioning

NB illustrative only !



**Table 5 – Green Economy Principles**

Green economy principles not explicitly addressed in the original Rio Principles on sustainable development (i.e. areas of potential added value)													Green economy principles addressed in the original Rio Principles on sustainable development													
Rio Principles addressed													2	2, 19	3	3	4	1, 5	5, 6, 7, 9, 27	7	8	10, 13	11, 17	12	15	16
Green Economy principles:													National sovereignty	International liability	Right to development	Equitable, fair and just – between and within countries and between generations	Protects biodiversity and ecosystems	Poverty reduction, well-being, livelihoods and social protection; access to essential services	Promotes international cooperation; avoid conditionalities on ODA and finance	CBDR	SCP; sustainable lifestyles	Governance - inclusive; democratic; participatory; accountable; transparent; stability; rule of law; democratic	Effective institutions, regulation legislation	Open and competitive markets; avoid trade restrictions	Precautionary approach	Internalises externalities
Is a means for achieving sustainable development																										
Maintains economic growth																										
Creates decent work and green jobs																										
Is resilient to risks and shocks																										
Is low carbon, low emissions																										
Is resource and energy efficient																										
Respects planetary boundaries or ecological limits or scarcity																										
Facilitates education and skills development																										
Drives innovation																										
Uses integrated decision-making																										
Measures beyond GDP; indicators/metrics																										
Supports human rights, workers' rights																										
Stakeholder Forum et al (2012)	x					x	x	x		x	x	x	x	x	x	x	x	x	x	x		x	x	x		
Green Economy Coalition (2011)	x		x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x		x	x		x	x	
ICC (2011)	x	x	x			x	x	x	x	x	x										x	x	x		x	
ITUC (2011)			x		x	x				x		x				x		x			x				x	
ANPED (2011)			x	x			x					x				x	x	x			x			x		
The Danish 92 Group (2012)	x		x							x		x				x			x		x	x				
GSP (2011)	x	x	x	x	x	x	x	x	x	x	x					x	x	x	x		x	x	x		x	
UN EMG (2011)	x	x	x	x	x	x										x	x				x					
<b>Summary</b>	<b>6</b>	<b>2</b>	<b>7</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>5</b>	<b>6</b>	<b>4</b>	<b>1</b>	<b>4</b>	<b>7</b>	<b>4</b>	<b>3</b>	<b>5</b>	
Rio+20 outcome document	x	x	x			x		x	x	x		x	x	x		x	x	x	x		x	x	x		x	

Source : United Nations Division for Sustainable Development, UNDESA (2012)

# Large Dams and the Green Economy

*A Green Economy is one which results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (UNEP)*

Large dams have already been viewed through this lens and many practical tools and processes proposed by for example :

- The World Commission on Dams (2000)
- The Hydropower Sustainability Assessment Protocol
- Safeguard policies of Multilateral Financing Institutions (MFIs)

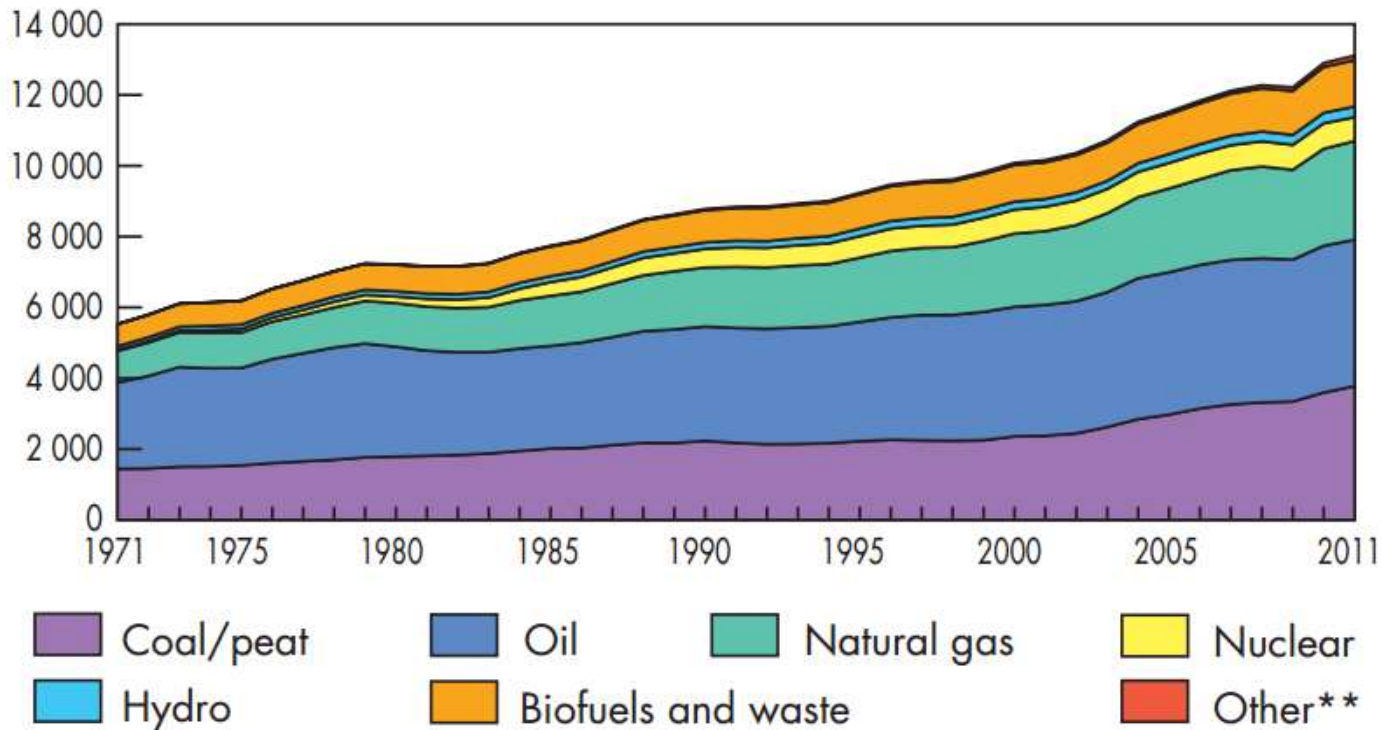
These have been incorporated into good practice measures (usually voluntary), at for example River Basin scale.

They cover many of the same areas as the GE framework, perhaps with the exception of hydropower's contribution to reducing GHG emissions ( green growth with global environmental benefit)

# 2. Hydropower and Green Growth

## World

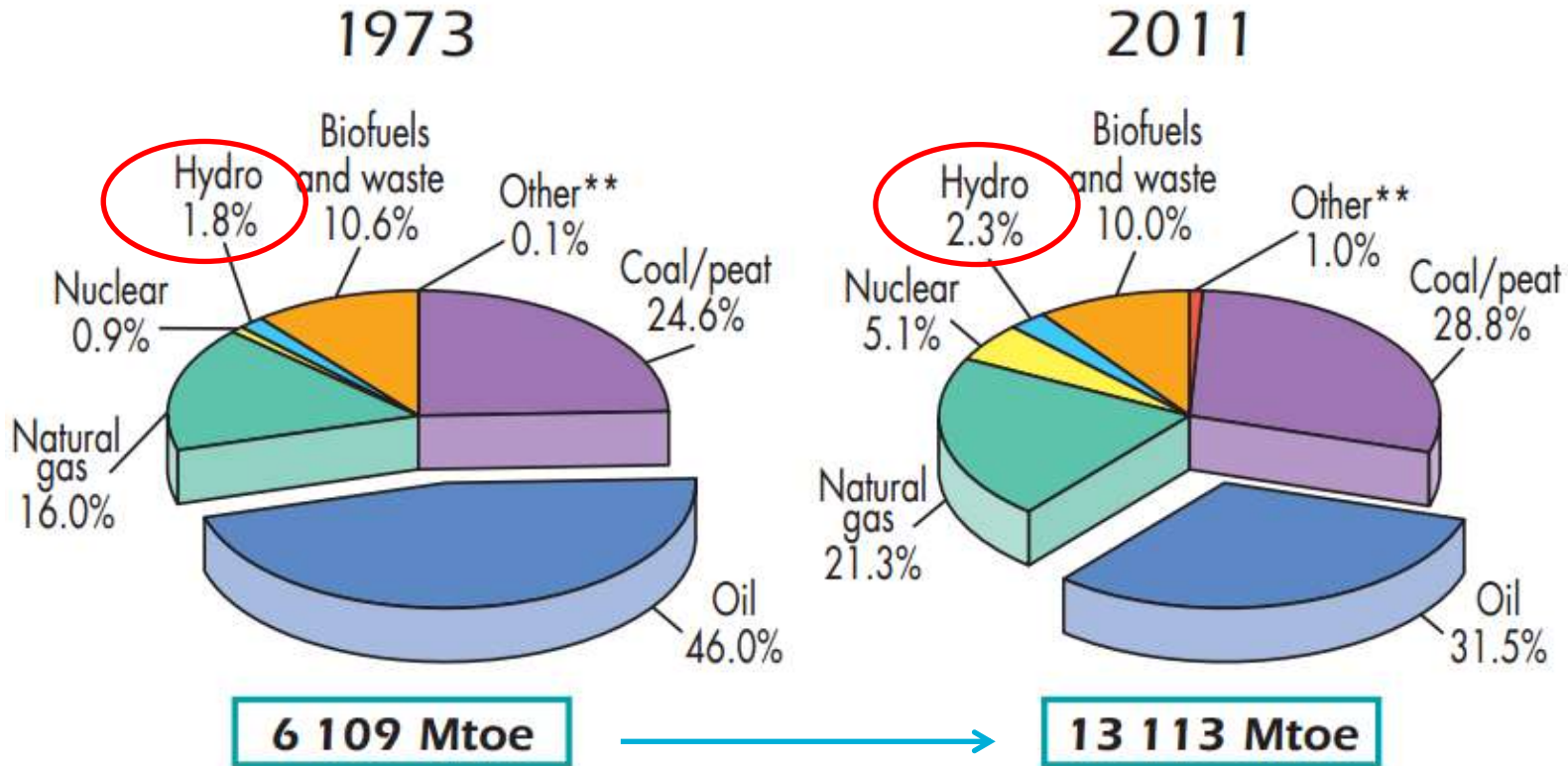
World\* total primary energy supply from 1971 to 2011 by fuel (Mtoe)



Source : International Energy Agency (2013)



# 1973 and 2011 fuel shares of TPES



\*World includes international aviation and international marine bunkers.

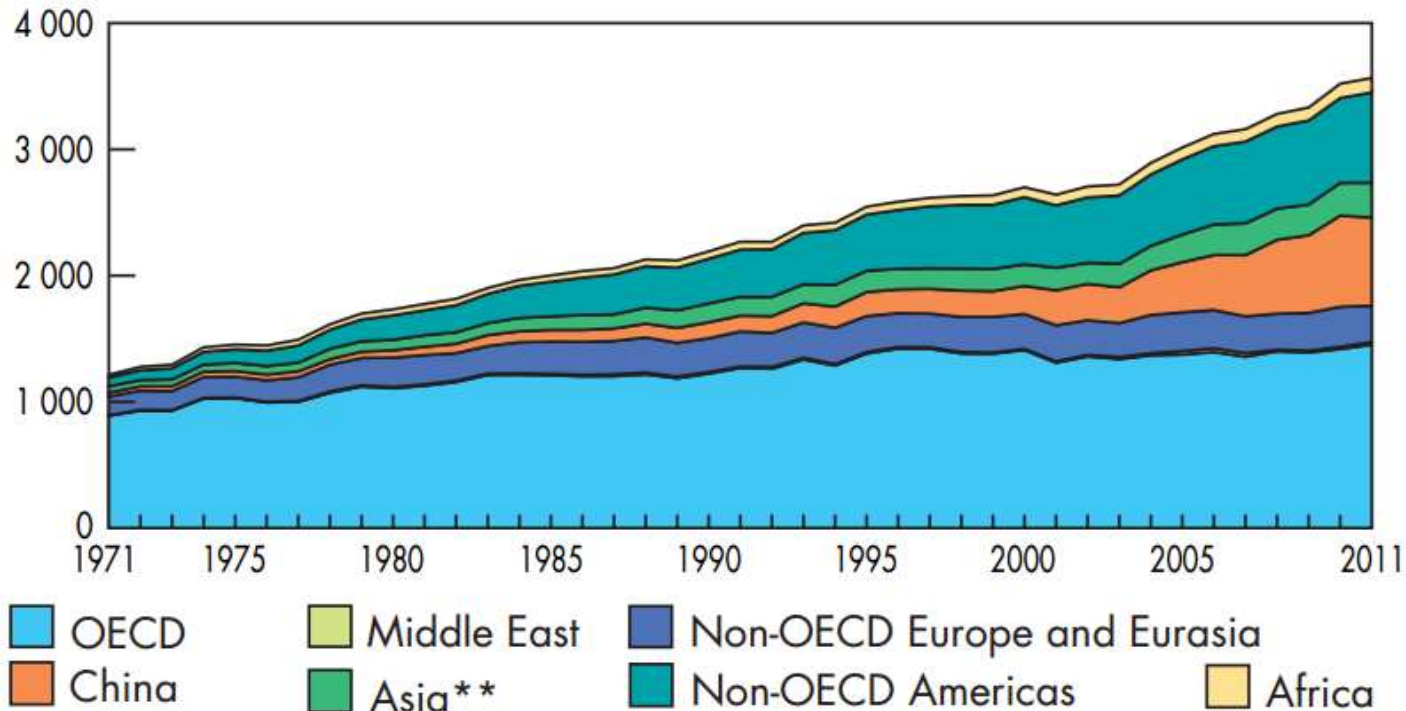
\*\*Other includes geothermal, solar, wind, heat, etc.

Source : International Energy Agency (2013)



# Hydro Production

Hydro\* production from 1971 to 2011  
by region (TWh)



**1 294 TWh**



**3 566 TWh**

Electricity generation = ± 30% of global GHGs ?

16% of global electricity generation

# 3. Improving social and environmental outcomes

Tools and approaches have been developed, refined and negotiated since 1990s.

- World Commission on Dams (WCD) recommendations
- MFI social and environmental safeguards (World Bank, IFC, etc)
- Hydropower Sustainability Assessment Protocol (coordinated by IHA)
- Equator Principles
  
- Broad buy-in to the 7 Strategic Principles proposed by WCD :
  - Gaining Public Acceptance
  - Comprehensive Options Assessment
  - Addressing Existing Dams (upgrading their efficiency, reducing their impacts)
  - Sustaining Rivers and Livelihoods
  - Recognising Entitlements and Sharing Benefits
  - Ensuring Compliance
  - Sharing Rivers for Peace, Development and Security

# Good practice for improved social and environmental outcomes

Many useful tools and approaches exist for addressing the particular impacts of dams related to a Green Economy approach eg

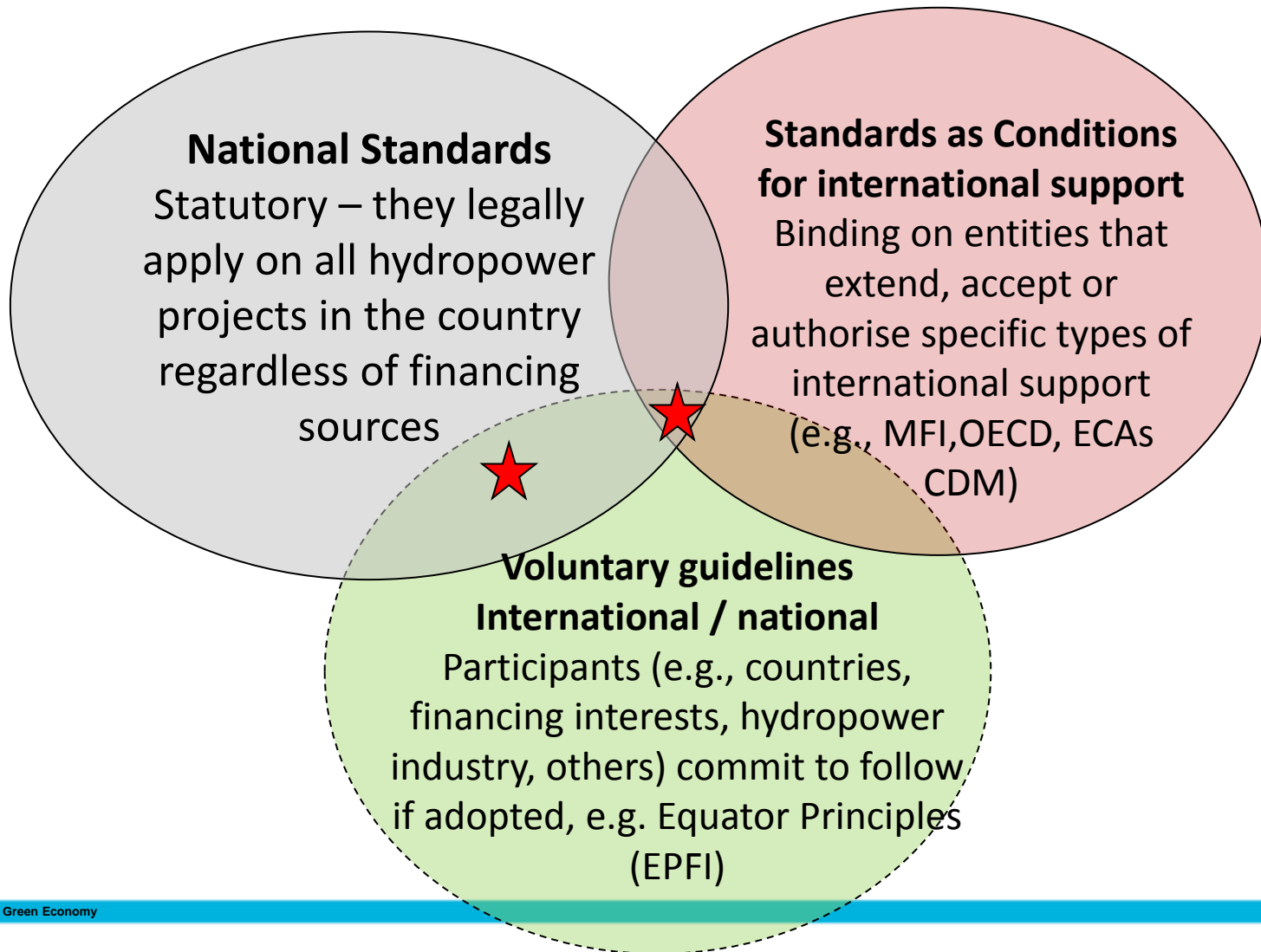
- Environmental flows (variable level offtakes, gated spillways) + offsets (watersheds)
- Benefit sharing and local taxation mechanisms ( up to 10% of revenues)
- Involvement of affected people in decision making (to different degrees)
- Signing resettlement and local development agreements with local affected people
- Assessment of GHG emissions from reservoirs (World Bank)

BUT Improved social and environmental assessment and management affects profitability – where to stop ? Is the bar set too high ?

How far should private or public finance go to meet externalities ? What is the role of the State ?

# Political economy of large dams.

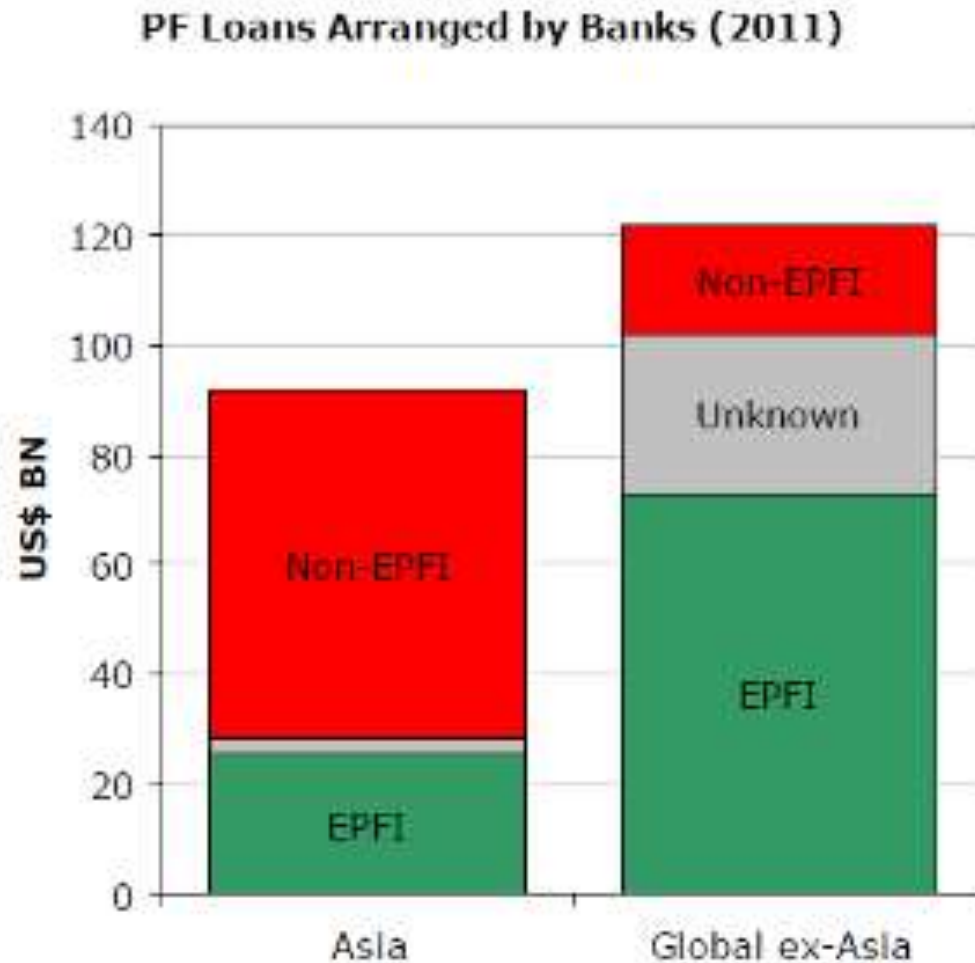
Source of financing is critical in determining social and environmental outcomes



# Political economy of large dams – Financial flows

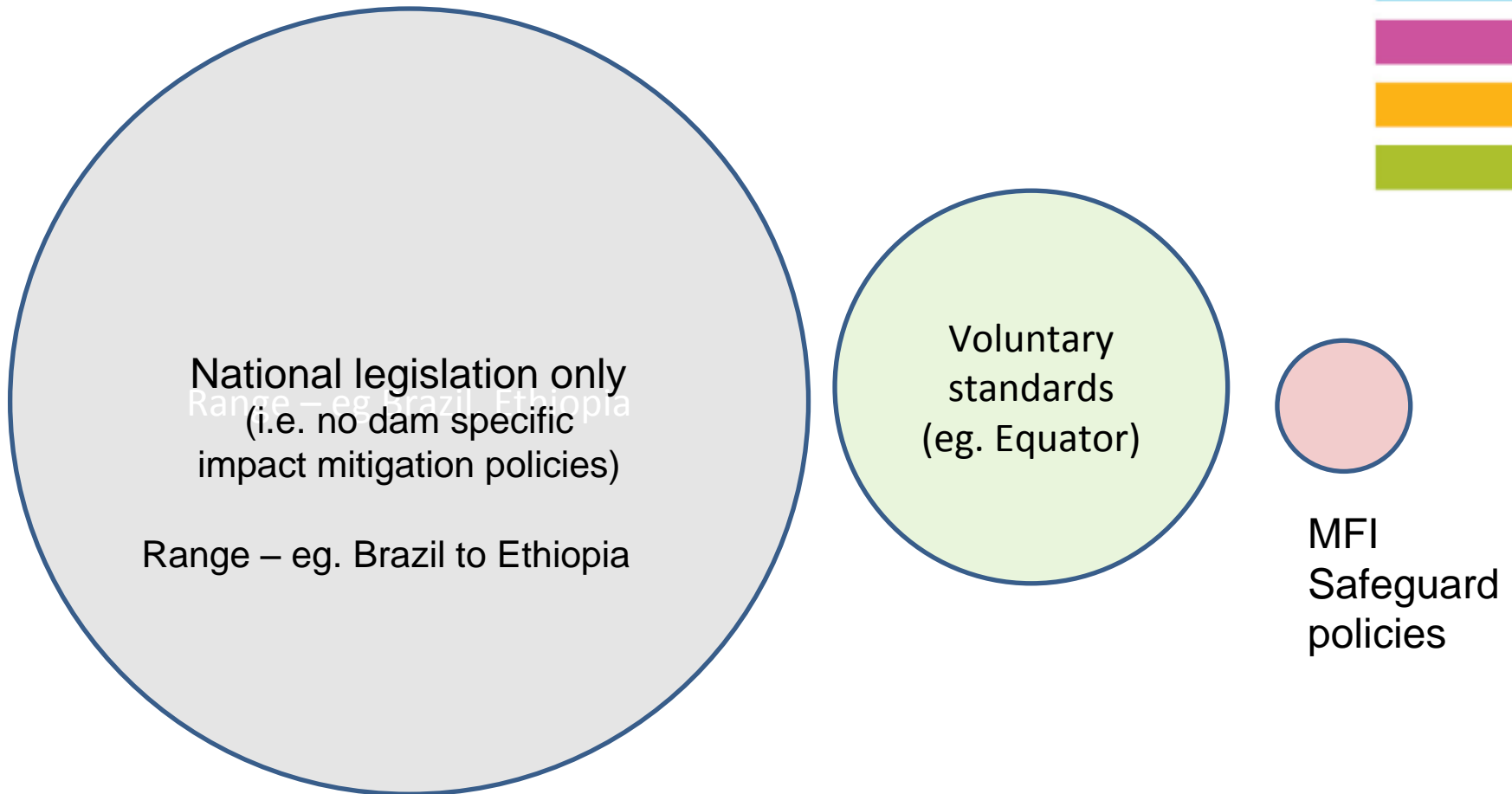
- Private FIs provide 80% of infrastructure financing globally as project finance (though not only hydropower)
- Asia represents over 73 % of new hydro capacity
- Only one Chinese Bank to date subscribes to the Equator Principles (EPFI) yet China is a major funder of hydropower (eg in Africa)
- CDM support to hydropower globally valued at 2.0 – 2.6 \$US BN /yr
- China + other Asian countries dominate in use of domestic financing sources for hydropower among developing countries
- India, Ethiopia and Brazil also have public investment models + independent power producers (IPPs)
- World Bank Group lending reached US\$1 billion by 2008, and is projected to rise to US\$2 billion annually over next several years.

# Infrastructure funding from private banks



Source: Project Finance International (PFI) 2011 League Tables

# Outcomes dependent on funding architecture



Estimate of proportion of dams built under different conditionality regimes



# Conclusions

- Hydropower contributes modestly to GG and GE through GHG mitigation
- National legislation, practice and capacity in many less developed countries is unable to deliver the good social and environmental outcomes aspired to by GE
- Addressing social and environmental issues properly adds costs. These tend to be avoided unless a project financing requirement
- Tools are available to mitigate social and environmental impacts, as envisaged by GE approaches, but are not a requirement for most projects
- If more Asian institutions were to apply Equator Principles and Chinese banks were to adopt safeguard approaches considerable progress could be made towards ensuring large dams are more systematically part of a GE.
- Hydropower industry increasingly aware that env + social due diligence is important (eg. HSAP)