new earth institute

Institutional Innovation of Ecological Civilization

This paper is offered through the Exchange & Commerce Faculty as a proposal for how existing nation-states may utilise the economic tools currently at their disposal, within the bounds of their current world view, to initiate an ecological renaissance.

New Earth Nation's essential economic horizon is oriented toward making obsolete the policy making agendas of nation-states altogether within a zero-point economy.

Content

1 Defining and understanding Ecological Civilisation

Mission:

Under our ToR we were assigned to give "Ecological Civilization" a definition and a framework.

Definition:

"Ecological Civilization" was stipulated in November 2012 by the 18th Communist Party Congress as one of the "five in one" framework[1] as an important pillar of the China Dream. We are proposing a five element framework based on a Chinese value matrix.

Defining Sustainable Development

The Chinese concept of Ecological Civilisation builds upon and seeks to expand the existing concept of Sustainable Development. So to understand Ecological Civilization, we need to understand the European approach to Sustainable Development, initially articulated in the Bundestag (Germany 1986). It was defined as comprising of three pillars: **Economic Sustainability** (as the material basis), **Environment Sustainability** essential for **continued existence** and **Social Sustainability** (people will benefit if the other two pillars are ensured).

These interlocking principles on the meaning of Sustainable Development are recognized throughout Europe; establishing a broad consensus among politicians and citizens. They were confirmed at the Earth Summit in Rio de Janeiro in 1992 and re-affirmed 20 years later in Rio+20.

European Experience Reference:

"Europe 2020" is the current European Union's ten-year growth strategy. As a response to the global financial crisis, it calls for overcoming the recession by creating the conditions for a different type of growth that is smarter, more sustainable and more inclusive. Europe has moved from a traditional GDP growth to a more comprehensive approach to sustainable approach. In this paper we present European examples which made this possible. These examples can serve as a reference for China's policy makers.

Europe 2020 Vision:

To realize the "Europe 2020" vision, five key targets have been set for the EU to achieve by the end of the decade:

- employment;
- education;
- research and innovation;
- social inclusion and poverty reduction;
- climate/energy.

The European headline targets for sustainable growth include:

- reduction of the greenhouse gas emissions by 20% compared to 1990 levels by 2020 (by 30% if the conditions are right)
- increase of the share of renewable energy in final consumption to 20%
- move towards a 20% increase in energy efficiency

[1] Ecological Civilisation brings five aspects: political, economic, cultural social and ecological civilisation together into the -*five becomes one*- principle.

China's unique sustainable development:

Implicit in "Europe 2020" is recognition that the old European and North Atlantic growth model has served its purpose becoming less relevant for our planet of increasingly limited resources. Europe has adopted a more comprehensive approach to sustainable development. China's Ecological Civilization needs to be unique to extend the core European concepts of Sustainable Development, adapting them to China's special circumstances.

In weighing China's conditions, a broader base of considerations includes sustaining social stability, which involves cultural and political system sustainability alongside rebalancing economic growth and prioritizing environmental protection.

EU 2020 Targets:

These targets are translated into national numbers so that each Member State can check its own progress towards these goals. In order to succeed, these goals are to be pursued on European, national and regional level.

The strategy includes seven 'flagship initiatives' (under 3 goals) providing a framework through which the EU and national authorities mutually reinforce their efforts in areas supporting the Europe 2020 priorities:

Goal: "Smart growth":

1. Digital agenda for Europe
2. Innovation Union
3. Youth on the move

Goal: "Sustainable growth":

4. Resource efficient Europe
5. An industrial policy for the globalisation era

Goal: "Inclusive growth":

6. An agenda for new skills and jobs
7. European platform against poverty

The strategy was proposed by the European Commission and accepted 2010 by the European Council.

The aim is to evolve a broad concept of higher standards of sustainability that is promoted across different government administrative departments and among stakeholders. This can be achieved through a long-term strategy of sustainable resource allocation and protection, including living standards, maintained through effective planning and energy utilization. The China Dream embraces traditional Chinese values. These include balance and health quality for the life of Chinese people today and in the future. This should be a priority to China's unique development model alongside high growth.

Defining Ecological Civilization:

Chinese traditional values were divided into Wu Chang (five Basic principles of humanity): **Ren** (mercy or compassion), **Yi** (righteousness or justice), **Li** (politeness or correct manners in relations), **Zhi** (wisdom or intrinsic knowledge), **Xin** (trust and honesty); and **Wu De** (five virtues): Zhong (devotion), **Xiao** (respect), **Jie** (thrift), **Yong** (bravery), **He** (peace and harmony).

Ecological Civilization" can be broadly defined as a new economic paradigm for healthy, holistic and sustainable improvements in the quality of life of Chinese people today and of future generations. Recognizing that we have entered the epoch of "ecological civilization" (following agricultural and industrial civilization development stages), the China Dream in its multi-faceted framework must balance material, spiritual and ecological aspects in establishing a paradigm for healthy, holistic and sustainable improvements in the quality of life for the Chinese nation.

EC comprehensive strategy:

This calls for a pragmatic and comprehensive energy and environment policy that strikes a right balance between maintaining robust economic growth and mitigating the negative environmental impact that has become increasingly acute and can threaten stability as environmental deterioration becomes an increasing cause of social dislocations and health costs to the nation.

It is important to consider the negative effects upon environment, water and agriculture, and health care as costs of irrational unbalanced growth, which may actually negate GDP figures. Such costs are ultimately borne by the state and passed back to the productive forces of both enterprises and workers in the form of taxes.

Ecological Civilization Framework:

The Ecological Civilisation framework is built upon Chinese values with Marx's scientific logic in a pragmatic way that allows for implementation. The framework comprises of five core elements:

- ### 金 Growth measurement

  Relevant matrix for measuring healthy and sustainable national growth ("GDP+++"[2]).

- ### 土 Infrastructure

  State infrastructure investment into grid conversion for renewable energy security, natural resources security (e.g. soil, water, air) and conservation of the natural heritage for future Chinese generations.

- ### 水 Finances

  Financial regulatory systems to assure efficient management of both national and private funds in the interest of promoting renewable energy, energy efficiency and ethical business practice that will ensure a stable economic growth.

- ### 木 Governance coordination

  Macro-coordination of policy requiring strengthening of governance, legal systems and guidance to coordinate various departments in achieving economic conditions that are both ecological and sustainable.

- ### 火 Communication

  Cultural ethical and social value promotion of ecological awareness, biodiversity and the necessity of careful management of national resources for future generations and long-term development of national interests and inspiration for technology innovation. The coordinated media information and educational programmes together with the harnessing of social media and technology can serve this purpose.

The five elements of the framework can correspond to the traditional five elements of Chinese philosophy, which are interactive and mutually influenced[3].

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[2] Three plus are standing for social well-being, health and environment.

[3] Gold 金 symbolizes broad-based prosperous growth; Earth 土 means the state-funded infrastructure; Water 水 indicates finances and the eternal flow of money; Wood 木 serves as the architectural framework for governance and governing institutions; Fire 火 is the spark of electronic mass communications that serves to benefit education of people in the one line of ecological civilization.

Graph 1: Model for Ecological Civilisation

Consistent with the vision of a China Dream, these five pillars of ecological civilization may be associated with having a cultural source in China's traditional Five Elements:

金 gold = GDP+++:

火 fire = spark of innovation and communication of ecological values;

土 earth = infrastructure for grid conversion to renewables;

水 water = financial tools of credit and fiscal policy to support renewable and efficient energy;

木 wood = the architecture of government and governance required to coordinate policy in achieving ecological civilization as a core part of the China Dream.

According to traditional Chinese philosophy these elements are all interactive, and supportive. There is a destructive element connected to the creative one. This means many old systems and measures need to be reformed and replaced with new structures for sustainability in this new century.

All five elements are supporting the Ecological Civilisation as well as sustainable growth and job creation for China. Ecological Civilisation offers a fresh economic paradigm that achieves both: economic growth and employment together with ecological sustainability for future generations in China. On this basis, China will be perceived internationally as a world leader in pioneering practical economic solutions for sustainable development projecting a new soft power as a core aspect of the China Dream.

Education system reform must prepare a whole generation with the technical skills from engineering to science to cope with new issues of water and food security, renewable energy and energy efficiency technologies and to commercialize this technology into profitable business and green industry for sustainability. This will serve the due purpose of capitalizing research and development for new technology in the next wave of technology evolution, which China will lead globally.

2 Recommendations for P.R. China

This section outlines the interactive aspects of five comprehensive modules of ecological civilization: 1) major infrastructure policies, complimented by 2) financial and banking sector policies, within the context of 3) a new national ecological civilization growth matrix (GDP+++), supported by 4) governance mechanism for coordinating departments, standards and supervision, and 5) coordinated cultural-media-education to foster values of ecological civilization.

Additionally, European Union experiences and best practices can provide valuable and practical input for China in considering pathways forward for the efficient and effective implementation of the Ecological Civilisation Framework. In the following, experiences in the area of green policies from the European Union will be portrayed next to the recommendations.

2.1 金 Growth measurement: Ecological GDP - Measurement of healthy, balanced and sustainable economic growth

Rethinking GDP

GDP is a western notion applied to measure an economy based on distorted values that overweigh the importance of industrial output over ecological and social considerations. This preoccupation with industrial output has led to negative systemic effects. High economic growth rates do not necessarily reflect a healthy environment. In some cases excessively high growth rates may reflect an economy with serious distortions.

For a more comprehensive picture, the damage to environment, food security and the subsequent deteriorating health of a nation's population need to be taken into account and factored into the equation. If we accounted for the costs of repairing the environment and treating ill health (e. g. health treatment, repairing buildings, private sector efficiency), the actual growth would be much less than perceived. Maybe it is even negative.

The current international press coverage of air quality on tourism and attractiveness of Chinese cities is only one aspect; the "social cost" (health care, food and water security, and the potential for social unrest) is another. Reflecting "Ecological

Civilization" in the measurement of growth will project a positive image for China both politically and economically[4].

Additionally, GDP is in contravention of basic Marxist precepts. Karl Marx condemned the basic price mechanisms used in determining GDP. Deng Xiaoping warned of the dangers associated with overdependence on "material civilization" which must be counter-balanced with "spiritual civilization". Reliance on GDP is an incorrect means of measuring China's unique socialist market economy with Chinese characteristics as it measures distortions over sustainability.

Good practices of the EU:

- **France** has established the Sen-Stiglitz-Fitoussi Commission to look at "measuring economic performance and social progress" to identify the limits of GDP and consider what additional information and tools could be added to create a more holistic picture.
- **United Kingdom** has been developing a "Happiness index" to measure *National Well-Being*
- **Germany** has developed the "Nationalen Wohlfahrtsindex" [1] (NWI) [National Welfare Index] based on 21 indicators.... and acknowledged by the government. This will be part of an annual sustainability report of the country.

Bhutan's Growth National Happiness (GNH) concept broke the traditional construct that GDP or industrial output as the sole measure economic benefit[5]. The approach of the GNH has trigger a worldwide discussion6 been widely discussed in Europe and been accepted in the United Nations, which puts forward the UNDP Human Development Index as a basis for reference. While Bhutan is a tiny nation and GNH cannot be applied blindly either, it has made economists break from traditional western constructs of weighing only GDP and balancing quantitative approaches against more qualitative measurements.

[4] Soft factors have gained importance in international economics and trade. European countries invest heavily in international PR for the attractiveness of their countries (e.g. the label "Made in Germany" or investor friendly regions), based on an overall friendly image.

[5] Nobel Laureate Joseph Stiglitz has argued, "What we measure affects what we do. If we use the wrong measures we will strive for the wrong things." The UN High Level Panel on Global Sustainability recommended that "the international community should measure development beyond gross domestic product (GDP) and develop a new sustainable development index or set of indicators."

[6] The focus at Rio+20 was on sustainable development. Measurement of progress across its strands is complex; yet it is also fundamental to providing an evidence base for policy-making.
Concern about the absence of sound data and indicators of sustainable development to guide decision-making was raised at the Earth Summit, twenty years ago. The last chapter of *Agenda 21, Information for Decision-making* (chapter 40), focused on the need to bridge the data gap and improve information availability at different levels. Article 40.4 reads: "Commonly used indicators such as the gross national product (GNP) and measurements of individual resource or pollution flows do not provide adequate indications of sustainability." Among other things, the chapter called for new indicators to be developed which consider the interactions between different sectors such as environmental, demographic, social, and developmental parameters. Since then, various approaches have been taken to measure elements of sustainable development, to complement or provide alternatives to GDP.

The new trend in Europe is to develop broader, new comprehensive measures of the economic progress. GDP is being factored against ecological, social etc. considerations. Priority is given to environment, physical health care, psychological well-being, cultural natural identity and heritage, quality of life, and overall well- being. This broader set of considerations is a better measurement of civilisation progress and reflects the interdependencies of the economic system with its material basis in a far better way.

Other international examples have been inspired by the European discussions:

- ***Green national accounting*** adjusts GDP to take into account the environmental costs of economic activity. The material bases of production such as air, water and soil (which are not bought and sold) are thus taken into account.
- The ***Ecological Footprint***, of the Global Footprint Network, looks at the natural resources required to maintain current consumption patterns. A key message from the *ecological footprint* work is that patterns of consumption and production are unsustainable at the global level and imbalanced regionally.
- The ***Environmental Performance Index (EPI),*** developed by the Yale Center for Environmental Law and Policy (YCELP) and the Center for Earth Information Science Information Network (CIESIN) at Columbia University, ranks countries on 22 performance indicators spanning ten categories, including agriculture, climate change, and energy. It tracks performance and progress on environmental health and ecosystem vitality.
- UNDP's **Human Development Report (HDR)** recognizes the limitations of existing development metrics. It complements the GDP as the sole measure for growth and captures key elements of human development, notably education, longevity and a decent standard of living[1].

GDP with Chinese characteristics:

China needs to have its own unique version of GDP with Chinese characteristics appropriate for the measurement of a socialist market economy. China should establish its own development matrix and measurements of economic achievement that is more holistic and environmentally conscious than the current GDP approach. China could adopt ("GDP+++") (+ environment, + healthcare, + social well-being [cultural-heritage-identity]). This should apply to the national economy, regional and local development, as well as social measures of individual success beyond conspicuous consumption. We can draw upon many of China's rich traditions and heritage values to protect the nation's biodiversity to encourage each family and individual to be responsible not to waste energy and resources.

New measures of success, quality not quantity growth are needed. China needs to find a way to measure success of government. It may consider having its own measurement for economic progress that can be unique in reflecting its nations´ characteristics, heritage, geography and social structure, and also showing the way to other nations. China can evolve its own fresh model of success measurement.

- The ***Happy Planet Index (HPI),*** developed by the New Economics Foundation, captures the degree to which people are able to live long and happy lives, per unit of environmental impact. It uses life expectancy data from UNDP's Human Development Reports, well-being data from the Gallup World Poll, and the *ecological footprint* data described above to rank countries according to their ability to promote human wellbeing while ensuring that their environmental impact is minimized.
- Canada has launched its *Index of Well-Being*

As local officials must rely on GDP as a measure of their achievement, it has led to redundant infrastructure investment that has wasted energy and resources, causing inflation, imbalance in the labour market, and inflated social expectations. A new measurement must be applied to national and local governments´ economic achievement, industry and business measurements of good corporate compliance, and individual measurements of social success and status.

At Rio+20, Helen Clark, Secretary-General of the UNDP and former prime minister of New Zealand introduced over half a dozen new matrixes to measure growth. The research she presented came from the world's most developed nations and from those universities that once incubated neo-liberal theories like shock therapy. That signals an awakening in the west that it is time to re-think the old GDP model.

2.2 土 Infrastructure: State guided fixed asset investments in renewable infrastructure

Stimulus investment for grid conversion

Good practices of the EU:

- In **Finland**, a feed-in-tariff scheme provides producers of energy based on wind, biomass and biogas financial support, which equals the difference between the production costs and the market price.
- Through the E-Energy program of the **German** government, new technologies of smart metering are tested. The aim of the projects, located in six model regions, is the digital interconnection and optimization of the energy supply system.[1]

Early recognition in Europe that polluting industries have a negative effect on sustainability and on the quality of life led to popular pressure on government for concise and systematic action. This required allocation of government fiscal expenditure away from fossil fuel based grids and related industrial sectors. From the 1990ies, many polluting industries went abroad.

Similarly, to avoid being dragged into global recession, China does now require a new round of stimulus, but the nature of the infrastructure investment must change and with it the quality of growth. The new stimulus should be invested into conversion of the existing energy grid from fossil fuels to renewable energy. This will be a massive infrastructure undertaking that will create generations of jobs from the highest doctorate in engineering and science to the unskilled migrant worker.

- **Germany** has been running the "KfW energy-efficient rehabilitation program" for residential buildings. It contains refurbishment measures aimed at reducing energy consumption, or the acquisition of a newly rehabilitated or refurbished building.

The energy network – or Great Grid - will be the greatest infrastructure undertaking of any in the history of China. Converting all electricity and power networks to renewable ones, which will require decentralizing grids to the community it will include the three principles of: 1) green (renewable and efficient energy, 2) blue (water conservancy and recycling), and 3) smart (efficient transportation and waste treatment/recycling).

2.2.1 The Great Green Grid (Energy and Transport)

The Great Grid will require new stimulus of fixed-asset infrastructure investment into a Great Green Grid for the transformation from fossil fuels to renewable energy. New stimulus package for the Great Green Grid will

- lead China's transition from fossil fuels to renewable energy
- drive growth, and
- create jobs.

From the 1990s China used infrastructure investment supported by stimulus to build transport networks across the nation to raise efficiency of transport necessary to bring the production of manufacturing to market. This vast undertaking created jobs allowing for transfer of employment from state-planned areas to private companies in the market economy.

The Great Green Grid will need to be supported through fiscal policies, and new financial products such as green bond issues.

Recommendations (three phases):

The Great Green Energy Grid (Phase I): State Infrastructure investments to convert the national energy grid from fossil fuels to renewable energy will reduce carbon footprint, reduce energy import reliance, stabilize inflation due to energy price rises, create jobs and stimulate growth. This capitalizes the accumulation of intellectual property and human capital using green development to lead in the next wave of technological revolution.

The Great Green Transport Grid (Phase II): Infrastructure investments to support upgrading of mass transit to smart, green systems based on renewable energy with energy efficiency fixtures and appliances will increase the efficiency of the economy, relieve urban congestion and transport deadlocks, and increase human work efficiency, create jobs and stimulate growth.

Good practices of the EU:

- Germany's energy transformation aims at dismissing nuclear energy and replacing it with efficiently used renewable energies. The strategy includes policies to increase the production and use of renewables as well as to decrease the use of energy in total, the modernization of the energy grid and the development of energy storages. In 2022, no atomic power plants should be used any more.

Investments in upgrading electric grid and mass transit networks will generate immediate economic stimulus and job creation. They will lay down the foundation for adopting more carbon-free energy sources like wind and solar. Upgrading transportation systems will yield significant economic and environmental benefits. Effective policies are needed to: encourage the use of mass transit, to adopt higher standards for gas and diesel fuels, to expand the production and use of electric vehicles, compressed natural gas powered vehicles and other advanced automobiles.

Development of "Smart," "Green" and "Blue" Urban Community (Phase III): Phase III can be achieved upon the basis of core infrastructure of Phases I and II above, to create sustainable cities and townships that will support the achievement of a comprehensive healthy national environment. Urban construction should adopt three core principles – "smart", "green", and "blue" – as follows:

- **"Smart":** Urban planning to relieve congestion and automobile usage through energy efficient transportation, the construction of smart renewable and efficient energy systems for buildings, comprehensive waste treatment and recycling, and ratios of green space to architecture, with preservation of heritage architecture and historic sections of cities for future generations.
- **"Green":** Planning for smart buildings requires an aggressive policy to be implemented and enforced to promote energy efficient building codes in commercial and residential real estate sectors. Updated building codes will increase the use of thermal insulation materials, solar panels, energy efficient lighting and appliances. These will help create green jobs and lead to significant energy savings.
- **"Blue":** Comprehensive national water conservancy infrastructure and wastewater treatment and recycling facilities, to save water, reduce unnecessary water waste, improve people's hygiene, create jobs and stimulate growth.

The recommendations above are targeting not only the construction of new cities, but address also the need for developing existing cities.

Green urban growth and the creation of green cities will arise from the Great Green Grid. Local government will in the next stage commence programs for urban green construction and smart cities connecting power systems to the Great Green Grid or in some areas decentralization of power to local renewable sources for efficiency. Cities across the country will need to invest in green infrastructure to adopt renewable energy for all major infrastructure, transport, and waste disposal treatment, energy efficiency

lighting systems and water savings. For the sake of energy efficiency some areas may require decentralization of energy at the local level.

Re-Greening China as Patriotic Commitment to Future Generations: National resources should be directed to the protection and restoration of forest and grassland, which will assure a sustainable environment while creating rural jobs. Preservation of the ecosystem should not be overlooked. This national program carried out at all levels will involve re-forestation, ending unnecessary and unregulated indiscriminate mining, especially in sensitive bio-diversity zones, and the creation of national parks on greater tracts of forest, mountain range and grassland.

It will be the responsibility of local authorities to establish Smart Green Cities that include comprehensive planning programs for renewable and efficient energy use for transport, energy efficient lighting, solar buildings, water resources and waste disposal.

The achievement of local government officials should not be judged on construction projects or based on statistical GDP but rather on how much energy they can save and how efficient they can make their energy systems and how much conversion to renewable energy can be achieved in the most efficient manner.

China's infrastructure development of the past two decades has effectively been driven by state stimulus, financed through bond issues. China's debt is largely internal so this policy can be continued to support the Great Green Grid. Local bond issues can support green urban growth. The next round of bond issues should be for green infrastructure investment and green economic stimulus to create a new round of growth and employment.

2.2.2 Coal utilization

Good practices of the EU:
The **Finish** government has commissioned research on technology to replace coal with biomass. A study shows that the possibilities of replacing vary greatly and estimates that by 2015, about 6 TWh of coal will be replaced with biomass fuels

To meet China's growing economic and environmental goals, it is necessary to develop an energy portfolio that draws on the nation's diverse energy supplies, including both conventional and renewable sources. Today coal accounts for over 70% of China's energy needs. Recognizing that adoption of renewable or alternative sources in the overall energy portfolio is likely to be a gradual process, there needs to be a comprehensive, sequenced and progressive policy to reduce the use of

coal through introducing substitutes while pursuing the transformation to renewable energy.

The following overlapping sequences may apply:

1. Sequence I: Cleaner More Efficient Coal Utilization: Coal as an abundant and inexpensive fuel will continue to play a significant role in power generation and as feedstock to various other industries. A proactive research and development effort should be undertaken to explore technologies which will enable a cleaner and more efficient use of coal, such as gasification and carbon capture and sequestration. The outputs should be commercialized for wider efficient use.

2. Sequence II: Adopting Cleaner Substitutes for Coal in the Transformation: Natural gas and coal bed methane are cleaner and lower-carbon substitutes for coal. Increasing the extraction and consumption of natural gas and coal bed methane will provide an important stepping-stone toward a greener economy at least in the near term as the transition to renewable energy / transport is underway.

3. Sequence III: Pursuing a Comprehensive Policy of Alternative Energy Replacements: Nuclear, hydro, wind, solar and geothermal will all play a part in reducing carbon footprint and diversifying energy supplies. Electric utilities may be required to meet a target portion of power demand through renewable energy sources. A holistic and balanced approach should be taken in pursuit of renewable or alternative energy sources while aggressively reducing the use of coal and sources that are not clean.

2.3 水 Finances: Financial Measures

Financing the Great Green Grid will require coordinated fiscal, monetary and financial policy. Fiscal policy should encourage manufacturing and export promotion of energy efficiency products through tax incentives and rebates and rebates or tax deductions for consumers purchasing green. The Carbon Development Mechanism operated under the Ministry of Finance (following expiration of Kyoto Protocol) can convert to become a Green Development Growth Fund and pioneer equity investments to stimulate private sector co-participation.

Good practices of the EU:
To promote private sector participation in environmental efforts together with the adoption of renewable and efficient energy, a number of European countries have promoted and supported various fiscal measures to support green growth in a comprehensive sense.

- In Sweden, only energy sources for transportation and hearting based on fossil fuels are charged with taxes, renewable fuels are not levied with taxes. [1]
- The United Kingdom Green Investment bank (funded by the government) is meant to finance UK's green economy by gathering private funds for promoting investments in ecologic infrastructure projects and supporting related state funding.[1], [1]
- Through UK's Green Deal, business and home-owners can receive loans to conduct energy saving related renovations of their properties. The borrowers repay the loans via their energy bills and the loans transfer with the property.[1]

Promotion of green credit will need to be comprehensive throughout the banking system. Preferential loan policy can be structured on two tiers.

- First is the **promotion of Green Real Estate**. This will require preferential construction financing for green urban footprint construction (smart buildings utilizing solar and energy efficiency for electricity needs) and supportive preferential real estate loans encouraging consumers to purchase units in green real estate residential and commercial projects.
- The second tier should through **preferential lending** promote manufacture of wide ranging energy efficiency products, from televisions and electrical appliances to comprehensive solar and waste treatment facilities, systems and equipment.

Introduce "green values" in company evaluations for both lending and listing purposes. Judge a company not only by its profit and loss sheet and shareholder's value as measurements but by environmental and social impact. Saving energy cuts operating costs. This needs to be considered in the long-term evaluation of profit and potential. Evaluations will need to be conducted by the appropriate regulatory authorities (such as the Ministry of Information and Industry, and the Environmental

Protection Bureau). They can establish standards that the industrial sector companies must reach and inspection/evaluation systems and centres, based upon the reports of which the banks would provide preferential lending. In turn media channels need to be utilized to encourage consumers to adopt "conscientious consumption" in their purchasing patterns, giving preference to energy efficiency and renewable energy products.

Energy efficient building codes: Improving energy efficiency requires that an aggressive policy should be implemented and enforced to promote energy efficient building codes in commercial and residential real estate sectors. Updated building codes will increase the use of thermal insulation materials, solar panels, energy efficient lighting and appliances. These will help create green jobs and lead to significant energy savings.

Banking policy can establish standards of green credit, but other ministries will issue requirements that the company, enterprise or office must reach a certain standard or the annual reduction of energy savings. In other words the company must meet a standard in the same way the GDP was a required standard and this will be the standard by which the company is judged. It will become the new form of stakeholder value to be applied in China.

Green credits: Banks cannot determine if a developer or company is meeting environmental standards. It must receive confirmation of standards or inspections from other ministries. So this is where coordination comes in and means re-introducing macro-coordinating bodies as before. New accounting measures will be required.

State Bond Issues can support stimulus package for national construction of the Great Green Energy and Transport Grid, and "Smart," "Green" and "Blue" Urban Community Construction: State stimulus package for the recommendations above can be financed through state bond issues purchased by domestic banks thereby keeping debt internal. Fiscal spending financed by "green bonds" will play a central role in meeting these pressing needs. Alternatively, funds may be raised through a cap-and-trade system, or to a less extent, environmental taxes.

Green Credit for the Development of Comprehensive Smart Green Real Estate Developments: Bank lending policy should prioritize comprehensive smart green real estate developments that adopt both renewable and efficient energy, together with water waste treatment and conservation, and discriminate against

developments which do not adopt such environmental policy into their comprehensive planning systems.

Green Credit to Support Green Manufacturing: Banking credit policy for manufacturing should support enterprises producing technology or equipment for the supply chain in renewable and energy efficiency sectors, transport, and materials/equipment used in construction, or manufacturing energy efficient electronics and household appliances ("conscientious consumer products"), while discriminating against manufacturers whose products are not within the comprehensive environmental policies of the state.

Green Credit for "Conscientious Home Consumption": Bank mortgage consumer lending policy should encourage and guide potential homeowners to prioritize purchase in smart green renewable/efficient energy developments, adopting water waste treatment and conservation, and not provide such favourable encouragement for those purchasing developments that are not within the comprehensive environmental policy of the state.

Green Credit to Encourage "Conscientious Product Consumption": Bank policy should offer favourable consumer credit to encourage and guide consumers to adopt "conscientious consumption" of smart green transport services, energy efficient electronic and household appliances.

"Global Green" Export Credits: Export credit policy can support manufacturers to export renewable sector technology/equipment and energy efficient electronics internationally that will drive China's new wave of export promotion of light industrial and electronic products in a national "global green" program that will drive a new era of growth for industry and employment.

Fiscal Policy Priority for Comprehensive Green Guidance: Fiscal policy can guide both developer, manufacturer and consumer behaviour adopting renewable/efficient energy and water conservation resources by offering tax credits and rebates.

Green Financial and Equity Instruments to Support Green Growth: A new phase of Chinese infrastructure and manufacturing growth will be based on renewable and efficient energy the financing of which may be supported by new issues of creative financing instruments in the form of green bonds, social enterprise equity funds, and

other tradable instruments that serve to reduce the actual carbon footprint. Achievement of the above tasks requires strategic and innovative thinking about financing. Public-private partnership may provide an alternative to take advantage of private capital. Favorable policies should encourage private sector participation. China's equity market can evolve to support listing of green and social enterprise funds and equity investment corporations by providing access to listing under requirements to encourage Green Listings.

Adopt New Valuations of Corporate Standards ("Stakeholder Value"): Green Listing prioritization on capital markets should be given to corporations adopting renewable/efficient energy and/or start-up enterprises pioneering renewable/efficient energy products and services. The concept of "stakeholder value" can be adopted in evaluating corporations (in addition to profit/loss and "shareholder value" is the company adopting renewable/efficient energy and being a responsible community stakeholder).

2.4 木 Governance: Coordination

The Chinese government needs a commission with powers to coordinate macro-policy for renewable and efficient energy usage, transport efficiency, climate change measures, waste treatment and standards for green financial sector. This will require a re-structuring of government functions. Line ministries and agencies need to follow a coordinated set of standards and centrally fixed objectives with overall monitoring.

Good practices of institutions:

- The **European Environment Agency** provides political actors and civil society with professional information about the environment on the European level.[1]
- The **German Energy Agency** conducts research on energy efficiency, develops quality standards, conducts energy efficiency campaigns and consults societal and political actors.[1]
- **UK's National Industrial Symbiosis Programme** offers advice and opportunities on sustainable resource management by brokering resource exchanges between companies. [1]

Establish a State Commission for Ecological Civilization: To achieve all of the above, co-ordination of the many regulatory authorities and industrial and transport sectors, a single macro-control body under the State Council empowered to coordinate the different ministries, bureaus and agencies is necessary. Issues involving environmental, technology and industry standards, credit and fiscal policy, will require a specially empowered ministerial body with over-arching powers to coordinate

between sectors monitor and establish comprehensive policy. This includes the national level as well as central and local authorities.

In addition to the GDP+++ for economic development, policymakers should provide clear and specific guidance on the implementation of the energy and environmental policy. Enforceable objectives should be set in terms of energy efficiency, pollutant reduction, and utilization of renewable energy.

Coordinating Policy

In the case of environmental policy a commission is particularly important. For instance: the China Banking Regulatory Commission in considering standards for green credit must have support and technical advice from such a commission. Otherwise as banking specialists they will not be able to assess what are the standards for green credit. Likewise, in considering priority for the listing of companies adopting renewable and efficient energy, the security regulatory commission will require similar support in establishing green standards.

Good practices of legal norms:

- The laws in the context of the **EU Climate and Energy Package** aims at reducing CO2 emissions by setting reduction targets, fuel quality standards and guidelines for carbon capture and storage.[1]
- The **Danish Energy Agreement:** energy companies have to realise specific energy savings, the installation of new oil-fired oilers is banned and the installation of smart grids is initiated.[1]
- **The German Energy Concept** sets that GHG emissions are to be cut, that the share of renewable energy is to be increased and that the rate of building renovations to upgrade energy performance per year has to be doubled.[1]

Coordinating Departments

Therefore, the commission will require special departments for banking and finance, urban planning and other sectorial departments. This may require merging certain function of other ministries under the new body or officials with particular areas of expertise. Effective legislation must be matched with supervision and monitoring.

The Commission will also have to have a legal department to work closely with other ministries and the National People's Congress in evolving systematic and comprehensive legislation, covering all industrial, financial, and other sectors such as food, transport etc. Establishment of an environmental criminal court to prosecute violators of environmental standards may be considered.

It is characteristic for the European Union that its programmes have a long-term perspective and cover a broad range of topics. Such as:

- The **strategy for sustainable development (2001)** represented a broad policy framework to meet the needs of the present without compromising the ability of future generations to meet their own needs. It rested on four pillars – economic, social, environmental and global governance – which reinforced one another. Measures were geared towards climate change, sustainable transport, modes of production and consumption, sustainable management of natural resources, biodiversity, public health, food safety and quality, social exclusion and poverty as well as the fight against global poverty.

Good practices from Member States:

- The protection of the environment has been integrated in the German constitution[1] and is for this reason binding for all future legal action.
- The Swedish government has endorsed an action plan for Green Public Procurement (GPP), which mandates the integration of environmental criteria into all stages of the public procurement processes.[1]
- Austria's Eco-Innovation Cluster Programme provides support to SMEs for the promotion of environmentally-friendly products by allocating community funded resources, which will then be reinvested in environmental R&D activities.[1]
- The Finish public enterprise TEKES funds innovation R&D projects in technology, services and business which contribute to the Finish economy or society.

- The current **"Flagship Initiative Resource Efficiency"** is part of the **EU 2020** Strategy, which is the European Union's ten-year growth strategy. It is oriented towards overcoming the crisis and addressing the shortcomings of the current growth model. It wants to create conditions for growth that is smarter, more sustainable and more inclusive. Its goals include a reduction of the greenhouse gas emissions by 20% compared to 1990 levels (by 2020), an increase of the share of renewables in final energy consumption to 20% and also a 20% increase in energy efficiency.
- The **long term vision for 2050 of the EU** can be summarized as following: "By 2050 the EU's economy has grown in a way that respects resource constraints and planetary boundaries, thus contributing to global economic transformation. Europe's economy is competitive, inclusive and provides a high standard of living with much lower environmental impacts. All resources are sustainably managed, from raw materials to energy, water, air, land and soil. Climate change milestones have been reached, while biodiversity and the ecosystem services it underpins have been protected, valued and substantially restored."[7]

[7] The European Commission 2011: Roadmap to a Resource Efficient Europe, S. 3

The governance systems of Europe and China are different for historical, cultural and social reasons. The European model cannot be transferred fully to China. The need for coordination for different government departments and competing interest is reflected through the parliamentary process into legislative policy that has a high impact. In some instances, a strong guiding or coordinating office is established on the level of government.

2.5 火 Communication: Construction of Ecological Civilization Values through Media, Education and Communication

China has a deep heritage and tradition in respecting the environment. Healthy living and environmental consciousness are in fact deeply rooted in Chinese traditions. Balanced living is a Chinese characteristic. The dissemination of information of environmental conservation, the importance of adopting renewable energy, the need to have quality food and lifestyle is a national campaign, which through comprehensive media and information propaganda can draw extensively on China's traditional values in a modern context in calling for a national identity that strives for the China Dream of a healthy, holistic and modern lifestyle that exudes with quality and not only quantity.

Education and the Positive Transformation of Social Values: The massive technical and technological transformation required to realize the vision of the Great Green Grid will involve training a whole new generation with fresh and relevant skills. To date student loans are primarily for economically underprivileged or rural students. Financial support for advanced education in renewable and efficient energy sectors, involving engineering and technology development, as well as commercialization is recommended. Moreover, values must change to protect the nation's biodiversity and to encourage each family and individual to be responsible not to waste energy and resources. Campaigns for education and sensitivity awareness building can be constructed through education, media and dissemination of information through traditional and new channels of communication and social networks.

Business training from operations to capital markets and finance will be necessary for a whole new generation that will be able to turn renewable efficient energy technologies into profitable businesses and financial instruments that will allow not just sustainability but the development or a real Green Economy. Education must span

across sectors and social strata from graduate studies to blue collar workers and will involve programs for technical skill development and training across a spectrum of fields for technicians, mechanics.

A program of loans should be encouraged for **education in the renewable energy and energy efficiency** fields from engineering, science, architecture, legal, business and finance. “Green Education” will be a critical pillar in coping with the many aspects of transition from fossil sources of energy to renewable for the Great Green Grid.

Too much emphasis in China’s media has been on material consumption, causing inflated expectations and excessive and unbalanced living. **Media can focus more on the importance on nature** in relation to mankind, glorify farmers, balanced lifestyle, healthy cooking and outdoor activities.

A **national campaign for Ecological Civilisation Awareness** needs to be put forth in all media, news and social networks. The importance of influencing the next generation in embracing higher standards of resource efficiency, climate protection and expectations of their role in China’s future development and lowering expectation in unnecessary consumption

Part of the problem of the Western model of conspicuous consumption has been promoted in China over the last years on the advice of the World Bank. Media encourages youth to over-consume, following the pattern of American youth. This is not sustainable in a nation of 1, 3 bn. people. Youth expectation needs to be managed to value the concerns of sustained natural environment. **Social media** and film need to be part of the Ecological Civilization propaganda campaign. Values and ideas concerning the ecological transformation, the use of efficient energy and the conservation of resources can be effectively communicated by this way.

There is a historic basis for environmental ethics in Europe. As soon as industrialisation started, there was a counter-movement. In the 1880ies, European concerned citizens and intellectual leaders were deeply angered and frustrated by the indiscriminate construction of factories and the pollution by capitals. As Marx already quoted: "capitalism destroys the very two fundaments it is built upon: 'work and nature". In these movements, people connected with old images and concepts of older philosophers and religions.

Good practices from the European Union and Member States:

- Generation Awake is a campaign by the European Commission, which is supposed to raise awareness about resource efficiency. It communicates information on how to save energy in daily life and consumption.[1]
- France has run its Energy Saving Awareness Campaign to promote a better understanding of energy consumption for a reduced household energy waste. The campaign addressed 8 million people and included comprehensive training on cost effective energy consumption.[1]
- The German Network Resource Efficiency provides discussion platforms, information events for companies, publications about best practices, information campaigns and an internet platform concerning resource efficiency.[1]

The environmentalism became a people's movement and awoke again in the 1960ies. People became aware of the connection between industrial pollution, diseases, health, as well as water and food security. A vast number of books appeared on environmental concerns, especially in Germany[8]. Their concerns were finally reflected in government policies worldwide[9].

Some of the discussions relied on Chinese traditions. Taoist teaching emphasises the importance of protecting nature as it nourishes mankind. It is one of natural living. Buddhism also stressed the causational effect, which influenced Europe's concept of the circular economy. In the present, ecological thinking is strongly tight to systems thinking.

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Beijing and Berlin, May 2014

[8] Titles included „Growth costs more and more", "Eco-politics: how?", "A planet gets plundered", "Saving energy – the new source of energy", "Social Costs", "Ecological Garden", "Ecology in the constitution", "Sun"; "Doable Utopia", "The green planet", "The green protest", "Technologies for humans", "Green policies", "Do we need to shift gears?", "The bio-house" etc. pp. (Germany, Fischer Alternativ)
[9] The "Global 2000 Report to the President" released in 1980 by the Council on Environmental Quality and the United States Department of State on environmental concerns was discussed widely in Europe.