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On theoretical thinking upon the research of recycled economy ----from the perspective of Marxist economics

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Abstract: The conflict between economic growth and global resources shortage, environmental pollution and ecological deterioration is becoming a significant world wide issue. It is imperative to vigorously develop recycled economy practice and explain recycled economy in the light economics theory. Although much has been discussed about recycled economy, it hasn't been touched by mainstream economics. This paper attempts to offer a review of researches on recycled economics and to explain that only by referring to Marxist economics can we really combine the scientific concept of development and recycled economy, and implement recycled economy with scientific economics foundations.

Key words: Recycled economy Mainstream economics Non-mainstream economics Marxist economics

1. The status quo and trends of research on recycled economy

Recycled/recycling economy is the short form for closing materials cycle. Beginning in the 1970s, research on recycled economy developed in the 1980s. Relatively complete strategic thinking of recycled economy came into shape in the 1990s. The advent of the new millennium witnessed the boom of study on recycled economy. Searching 'recycled economy' without 'china' via google scholar, one can see that there are only 1760 articles before 1970, the number rises to 2910 till 1979, 4740 till 1989, 9560 till 1999 and 27200 till May 2007. However, putting 'recycled/recycling economy' into the largest contents database of economics IDEA, only 56 articles appear by Feb.2008. Besides, according to the review on recycled economy published by World Bank in 2004, there are only 9 top articles introducing recycled economy, with one written by Germany and the rest all by Chinese^[1]. Apparently, mainstream economics doesn't concern much about the research of recycled economy.

Nevertheless, economics including mainstream economics has to admit that the conflict between economic growth and global resources shortage, environmental pollution and ecological deterioration is becoming a significant world wide issue. It necessitates recycled economy practice and calls for economics interpretation of recycled economy. In fact, what mainstream economics unwilling and unable to elaborate is what

non-mainstream economics focus on. Given this fact, it's necessary to theoretically sort out and differentiate between mainstream economics and non-mainstream economics' attitude, position, methods and views on recycle economy research. This is of great importance to the future sustainable development, to market economy practice in reality and to China's "post-Kyoto era" policy in particular.

2. Why mainstream economics keep silent on recycled economy

Mainstream schools are those schools or theories which dominate the field of economics. Neo-liberalism and neo-classical schools has become mainstream schools from 1970s onwards^[2]. Mainstream economics has been described as "mainstream" because in the background of economic globalization, it serves as the spokesman for the developed capitalist mode of production still dominating the global economy. This mode of production is based on "capital". It allocates resources by market, targets at high capital profits and develops at the expense of people in developing countries. In fact, Engels had made clear the point as early as 160 years ago: "The only progress made by Liberal political economics for sure is the knowledge about various laws of private ownership. Contained in political economics indeed, these laws didn't come into final conclusion and had yet to be stated clearly"^{[3](P599)}

As seen from policy inclination, in order to rapidly realize the globalization strategy led by US of property rights privatization, market liberalization and non-regulation under "Washington Consensus" (1990) framework, mainstream economics strongly advocate "market clearing", "minimizing the role of government," and "rapid privatization"^[4] It is obvious that this strategy is completely different from the sustainable development strategy constructed under the framework of the " United Nations consensus " (1987,1992)¹. While

1 We call the following fact as "consensus of the United Nations": In 1987, Environment and

the former is to achieve the interests of United States, the latter is to realize common interests of all countries.

In view of theoretical framework, with its theory border or research scope strictly confined within the framework of market, the mainstream economics only study on economic activities within the scope of market mechanism, leaving behind non-economic activities outside market mechanism. This implies a provision: recycled economy, originated from environment and ecology protection activities, does not belong to economic activities since it is generated outside the framework of market.

In view of study objects and research purposes, targeting at achieving high profits of monopoly capital (such as petroleum monopoly capital), mainstream economics focus on market activities centered on the resource allocation of capital. These market activities include price, supply and demand, investment, finance, international trade, world market and Multinational Corporation, etc. The research objects of recycled economy are conservation-oriented economy of resources input reduction and rational use of resources, with the purpose to coordinate harmonious relationship between people and nature, people and people.

As for the theoretical foundation, based on "maximizing private interests", mainstream economics' worldview has been evolving to the world hegemony of "we take the initiative,

Development Special Committee headed by Mrs. Brent submitted to UN General Assembly the report "Our Common Future" with regard to major economic, social and environmental issues faced by mankind. "Sustainable development" of human society had been raised by UN from Brent report's general point "from a planet to a world". In 1992, 178 countries sent delegations to the United Nations Conference on Environment and Development. 103 heads of State and Government participated personally and delivered speech on sustainable development strategy. United Nations Commission on Sustainable Development was founded on this conference. The "Earth Charter", "21 Century Agenda", "UN Framework Convention on Climate Change" (UNFCCC), "UN Convention on Biological Diversity" (UNCBD) were discussed and adopted during the conference too.

I am the world". For example, the US population is less than 5 per cent of the world's population, but their carbon emission accounts for more than 25 percent of global emission; an ordinary American consumes annually 8 000 pounds of oil, 4 700 pounds of natural gas, 5 150 pounds of coal and 0.1 pounds uranium, the one nation consumes 25% of the world's total energy^[5]. What matches with this kind of worldview is the imperial development concept which manifests itself as "beggar-thy-neighbor " unilateralism of economic growth in contemporary times. United States' refuse to ratify "Kyoto Protocol" is the very portrayal of its unilateralism.

In short, no matter from which perspective, mainstream economics are not interested in sustainable development issues closely relate to environmental protection, resources conservation and ecological deterioration, let alone recycled economy which supports sustainable development. Recycled economy is, in essence, the "new economy shape" that bears the interests of all human kind, that adheres to the balance between fairness and efficiency and that surpasses market economy.

3. The enlightenment of non-mainstream economics' study on recycled economy

In the 1970s, when neo-liberalism and neo-classical schools was rising to mainstream schools, "non-mainstream" new economics was also springing up like mushroom. Among them, those schools studying the conflicts between economic growth and environment, resources and ecology was having more and more influence, such as environmental economics, resource economics, industrial ecology, ecological economics, international ecological economics, sustainable development economics, and evolutionary economics and so on. Research on recycled economy was included in those theories. Varying from environmental economics and resource economics, the new economics school studying ecology has not yet been recognized by mainstream economics school.

From the perspective of theoretical premise, this school's not only generated out of the debate upon environmental pollution and limits of growth, but is also based on criticism towards traditional worldview and concept of development. In their view: "Since the last world war, the ripple effects resulting from the recombination of world forces has required remorse for the traditional way of thinking of economic, social and national relations": "Where will the development go?" in the end they stress: the "deplorable", the "naive ever growing stories recognized by most economists" must be discarded, the thinking and values incurring "vicious development" to contemporary world must be opposed to.

As seen from theoretical foundation, this school is based on the new development concept of "convergence between science and value", "comprehensive development of all human kinds" and the new worldview guiding "new dialogue between man and nature" .

They emphasize that: "the attention on development issues indicates a variety of fundamental changes in the field of economics and its analytical tools. The main points are: development relates to main actors-human body, relates to human society and its objectives and its constantly evolving purposes. New concept of development, once accepted, will bring about a series of new development, along with it is the constant revolution of human values" ^[6] Citing "Entropy: a new outlook on the world" to demonstrate their general view of industrialized world, they stress that the rapid development of science and technology will have negative impact according to dissipative structure theory of contemporary physics. They are convinced that: entropy will not only change the future of mankind today, but will also change the future of our generations tomorrow. ^[7]

In the view of theoretical framework, they break through mainstream economics' framework of studying economic activities just from the perspective of capital proliferation, market allocation and GDP growth. They extend economics research objects to human's sustainable development goals, ecological footprint and ecological burden, the equality of relations among countries, the justice of contemporary world economic and political order, the realization of mankind's common well-being, etc. In a word, they examine and consider, from a brand-new angle, the contemporary economic growth mode and economic development trends, and World Development Path bearing on humankind's future fate.

From the perspective of research objects, under the guidance of new development concept and new worldview, they insist on treating economic system as subsystem belonging to the natural system; thus, they insist on studying ecological economy in the overlap zones of staggered movement of nature and society. In their view, as the only economic activity that will support sustainable development, ecological economy differs from mainstream economics in that the latter study market economy with a narrow approach of capital proliferation. Recycled economy is the specific operational form of ecological economy.

4. Theoretical innovation of contemporary economics is imperative for theoretical research on recycled economy

Recycle economy, no matter how specific it is, is still a kind of economic activity in essence; hence it must be studied with economic science which can truly review the nature, characteristics and function of economic activities. The above analysis has already indicated that contemporary mainstream economics are insufficient to explain recycled economic activities. Therefore, innovation of contemporary economic theory is inherent in the discussion.

Innovation is either a kind of complex activities occurring in the edge of order and disorder or a kind of complex structure generated in the evolution process from the chaos to

order. In this sense, Chris•Langton, one of the founders of contemporary complex science theory, summarized innovative research activities as "the science born at the edge of order and chaos." [8] Apparently, this interpretation is closer to the essence of innovation than "destructive creation" as understood by Joseph Schumpeter, the innovation theory pioneer.

Recycled economy activity is indeed of "complex" nature. This kind of complexity manifests itself as: (1) Whether there is real foundation for developing recycled economy in contemporary market economy framework; (2) since "traditional and modern" economy co-exist in china and more than 95% of china's enterprises are small to medium ones, whether there are technological and economic foundations for them to realize waste reduction, materialization and detoxification so that material can recycle harmoniously between economic system and natural ecology system? (3) if there are such foundations, then what are the dynamic mechanism, long effective mechanism and intervention mechanism to develop recycled economy? (4) if there are not, then what are the objective reasons to support or restrain recycled economy development? (5) if it is ambiguous to say whether there are such foundations, then where is the innovation point to develop recycled economy?

Just as all present innovation activities, the innovation of contemporary economic theory is not simply the "devastating subversion" of past or present economic theory. Rather, it is to build a bridge connecting "past" (order), "present" (chaos) and "future" (new order). Only such economic theory can scientifically explain on the one hand why and how the driving force and resistance to developing recycled economy root deeply in the framework of market economy, and on the other hand elucidate why and how recycled economy is, in essence, a new production mode or economic form differing from market economy. It is based on such economic theory that the framework of recycled economics can be constructed at the brink of order and chaos, that the sustainable development of recycled economy can be supported by theoretical basis.

5. Marxist economics provides theoretical framework for the innovation of recycled economics theory

First, Marxist economics "is essentially based on Historical Materialism," [14] (p38) As scientific concept of development, it reveals what researchers of recycled economics haven't clearly explained-- Nature, human beings, human activity, society, environment as well as their mutual relations. (1) Nature is the origin of human life and human society; (2) mankind itself is the logical evolution of nature; (3) "One aspect of human activity - people transform nature. Another, people transform of people"; [10] (p88) the environment for mankind's survival, life, development, and enjoyment, "conforming to human activities, environmental changes can only be seen and reasonably understood as practice of

revolutions"^[10] (p59)

Second, by systematically revealing the inherent logic among human activities, labor, living labor, human initiative and social organization forms, Marxist economics provides theoretical basis for recycled economics to scientifically explain on the interaction between human activities and the environment of human survival and development. (1)human activity or labor refers to movement or energy release state emerging in the course of human realizing their own potential; (2)this "state" shows that labor, as "living labor", distinct from and oppose to "dead labor" like labor material and the subject of labor; (3)from the natural evolution perspective, opposite to "dead material", living labor is a kind of "living material"¹ which can lead to significant changes in earth "biosphere"; (4)in the view of human evolution, the special energy of living labor comes from mankind initiative and social form of labor(i.e. production mode) ²unique to human; (5) with the development of human activities' ability system and social relations system, human activities or labor, whether its content (mental and physical) or its specific form (the social division of labor system), has been changing as time goes; (6)since labor occurs in staggered relations of

1“Living material” is a theory created by former soviet-union Biogeochemical specialist Вернадский in 1930s. This theory was later developed into biosphere theory. Living material is the combination of countless organisms on the earth. It is a kind of material demonstrated by the weight, chemical composition, energy, space characteristics of organisms, and the "living" part of living material manifests itself through synergic creation of earth's biosphere by all single organisms. Please refer to В·И·Вернадский: Живое вещество(Living material) published by China Commercial Press in 1989

2 Marx attaches great importance to human initiative demonstrated by language and awareness. He believes that this initiative help turn natural division of labor into conscious social division of labor. Then with the complex social division of labor, there is distribution. Distribution, unequal distribution in particular, leads to ownership of different nature, so it comes complex special interests and common interests and various countries and international relations. Please refer to Complete works of Marx & Engels Voll, People Press pp81-89

nature and society, labor itself and all the other related factors are associated with natural and social duality.

Third, by systematically revealing how labor, production labor, and production activity turn into economic activity, economic base, economic structure and economic shape through production mode, Marxist economics provides referable logic methods for recycled economy to construct theoretical framework via economics concepts (1) labor, as human activities intermediating in the staggered relations between nature and society, is production labor or activities from the point of view of results; (2) production mode is the only carrier coupling productive force element(system) and production relations element(system) in social system. The first relates to material, energy and information transformation between man and nature, the latter regarding interests exchange and distribution among people; (3) production labor or production activities, once embedded in a particular framework of social production mode, will be transformed into economic activities with certain social nature; (4) from the static point of view, production mode, together with the coupled economic activities, have formed the social economic structure, i.e. the economic base supporting political superstructure and cultural ideology; from the dynamic perspective, the specific mode of production or economic structure or the economic base has become signs distinguishing between socio-economic morphology.

Fourth, Marxist Economics offers a comprehensive explanation of the capitalist mode of production and the relationship between its revolution and economic growth pattern. This explanation sheds new light upon the research of how recycled economy would promote economic development patterns' change. (1) Production mode revolution is the fundamental force deciding or pushing forward economic structural change or economic form evolution. It is also the force to decide and promote new economic growth model or economic development pattern. Therefore recycled economy must be first treated as a new mode of production then as a new model of economic development, not the otherwise; (2) "the task of economic science is to prove that social ills now beginning to emerge is the inevitable result of existing production mode. These ills also foretell the collapse of the current production mode. It can be found in the internal movement of the collapsing economic form future factors of new production and exchange organization that can eliminate these ills,. "[11] (p492) Capital was initially established on given technological conditions in the historyit did not directly change the mode of production" [12] (p359) For capital to acquire excess surplus value, "there must be changes in technological and social conditions of labor process, hence revolutions in production mode itself." [12] (p366) those capitalists who adopt improved production methods occupy a greater portion of surplus labor in a working day than other capitalists in the same industry. What he has done individually is what all the capital has done when producing relative surplus value.....the same law prescribing decision of value by labor time makes those capitalists adopting new method feel that their goods must be sold below its social value, meanwhile mandatory as

competition law, forces his competitors to adopt new production methods too. "[12] (p370-371)

Fifth, the capital cycle theory in Marxist economics provides an immediate reference to constructing recycled economy theory under the framework of market economy. Capital cycle is the basic form of capital movement. Industrial capital cycle, among various forms of capital cycle, is the only capitals form directly bearing the staggered movement relations between nature and society. In "Capital" II, Marx studies in detail a single industrial capital cycle and social total capital cycle -their forms (including staggered cycle of material energy resources and value proliferation, staggered cycle of goods' using value, value and surplus value, staggered cycle of material flow and currency flow in market economy, staggered cycle of means of production and means of subsistence in social total product and staggered cycle of social total currency and total credit), features (including characteristics of various forms of cycling, as well as features of the total cycle as the reunification of various cycle forms), conditions (various conditions deciding and constraining the normal cycle of capital), as well as the relationship between capital cycle speed and capital proliferation determined by the above and so on.

Sixth, Marxist economics is "the science to discover laws governing production and exchange of material means of subsistence in human society." [11] (p489) Marx emphasized that (1) "the first research subject is the special law of each individual development stage of production and exchange" [11] (p489) because "production and exchange conditions for people in different countries vary and they vary with different generations in each country. Therefore political economics can't be the same for all countries and all historical era," besides, the studying material of economics, "is historical, i.e. constantly changing." [11] (p489) These laws "must be interpreted from contradictions in material life, from existing conflicts between social productive forces and production relations.....human always only put forward tasks that can be solved by mankind themselves, because careful study reviews that task itself only generates when material conditions required to solve it already exist, or at least in the process of formation." [9] (p33) "the following two must be distinguished from each other at all times: One is the material revolution, occurred in economic conditions of production, which can be specified by the accuracy of science. The other is the legal, political, religious, art or philosophical, in short, ideological form through which people aware of this conflict and strive to overcome it." [9] (p33) The former "blaze a trail for reconciliation between nature and human and humanity itself", [3] (p603) the latter provides conditions for the former.

Seventh, Marxist economics propose that (1) capitalist mode of production is definitely not the eternal mode to take into account the interaction between people and nature; (2) capitalist mode of production, while triggering economic growth, spillovers its internal conflicts via global market network, which not only incurs links and contradictions among various countries, but also leads to links and conflicts between human and nature (3) the

capitalist mode of production in developed countries, while promoting their economic growth, renders globally tremendous waste of human resources, material resources and natural resources, as well as continuous deterioration of humanity environment and ecological environment, which is still the history knot constraining economic development of developing countries (4) Keynesian macro-economic policies featured by promoting economic growth through stimulating "effective demand" has, in effect, extended the exploitation of capital on wage labor to the compression on the whole nature.

Eighth, Engels warned long time ago: "Never be too much indulged in our victory over nature. For each such victory, nature has revenged. we must always remember: Rule over nature is not the same as conquering other nations, not as if we are out of nature, - on the contrary, we, together with our flesh, blood and minds, all exist in nature and belong to nature; Our rule of nature, is because we are stronger than all other animals in that we can understand and correctly apply the laws of nature. "^{[13] (p383-384)} today, it is time to recognize the teachings of Engels.

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