Rational and sustainable international policy for the forest sector
- with consideration of energy, global warming, risk, and regional development

Preliminary Plan 2009-08-05

TO THE NATIONAL COORDINATORS:
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Objectives:

The project should develop a rational and sustainable international policy for the forest sector with consideration of energy, global warming, risk, and regional development.
Specific national issues and conditions should be considered in this process.

Motivation:

The project group will investigate several central decision problems of extraordinary importance to companies, individuals and nations within the global community and develop optimal solutions.

These decision problems are highly relevant to forestry and forest industry, global energy supply and production, global warming, financial, technical and other risks of many kinds and general development in different regions around the globe.

It is not possible to find rational solutions to these problems if they are studied separately, since they are linked in many ways.

The project team has the methodological and interdisciplinary expertise needed to derive more relevant and qualified solutions to these complex problems of global importance than any other groups, organizations or individuals.

Furthermore, there is an enormous public interest in the objectives of this project.

Methodology:

Quantitative methods from the field of operations research in combination with economics, logistics, relevant natural sciences and technology.

We will develop a system that integrates the best available science from the forest sector and connected sectors into a logical framework. This framework will integrate information from a wide range of sources, including several already existing sources, and enable logical support for real policy development and decision making. The framework will use the principles of Decision Sciences, Management Science and Operations Research to integrate the most relevant information into a form useable by policy decision makers.

Organization in each participating country:

National (or regional) research leader and coordinator	1
Reserachers (or PhD students)	3-5

Funding:

First priority: Funding from international funds.
Second priority: National sources.

Time Table:

Year 1
2010 (August) – 2011 (July)
Development of first generation analysis and planning methods
Pilot studies of relevant activities and conditions in small regions in the different countries.
Excursions to the investigated small regions. Project discussions with involved parties.
Methodological education within the research project.
Conference 1 with report

Year 2
2011 (August) – 2012 (July)
Development of "second generation" general and country specific analysis and planning methods, suited for the project family.
Studies of activities and conditions in large regions in the different countries.
Model analysis of rational coordination of activities in the large regions in the different countries.
Excursions to the investigated large regions. Project discussions with involved parties.
Methodological education within the research project.
Conference 2 with report

Year 3
2012 (August) – 2013 (July)
Development of "third generation" general and country specific analysis and planning methods, suited for the project family.
Studies of activities and conditions at national levels in the different countries. Explicit consideration of interregional trade and exchange of different kinds. Explicit consideration of system effects on greenhouse gases and risk. Model analysis of rational coordination of activities at the national levels. Excursions to the investigated countries. Project discussions with involved parties. Methodological education within the research project.
Conference 3 with report

Year 4
2013 (August) – 2014 (July)
Development of "fourth generation" international analysis and planning methods, suited for the project family.
Studies of activities and conditions at the international level and the connections to the activities in the different countries. Explicit consideration of international trade and exchange of different kinds. Explicit consideration of international system effects on greenhouse gases and risk. Model analysis of rational coordination of activities at the international level.
Meetings with international organizations and EC. Project discussions with involved parties.
Methodological education within the research project.
Conference 4 with report

Regions and Partners

The project organization design process is still going on. Many constructive suggestions have already been obtained and regional coordinators defined for several parts of our planet.

National and regional coordinators with perspectives on the global project

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Iran

1st report- date 13-01-09
Rational and sustainable international policy for the forest sector with consideration of energy, global warming, risk, and regional development
- Case study on Iranian forests

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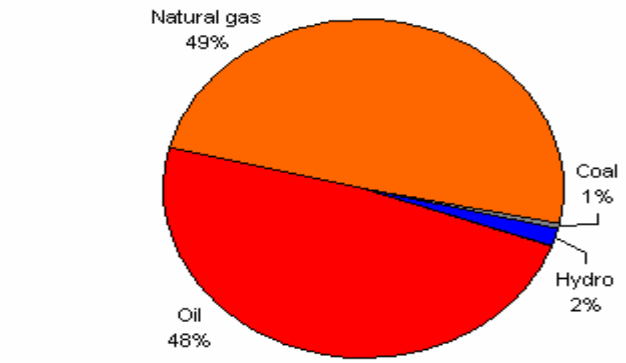
Introduction:

The area of natural forest in Iran is approximately 12.4 million hectares, equal to 7.5 percent of the total area of Iran. Of this, approximately 1.9 million hectares are commercial forests called Iranian Caspian, Hyrcanian or Northern forests. Other forests are waste and non-commercial forests. Because of the severe climatic conditions and forest degradation, forests in other regions are not exploited for industrial wood production. The total stock at the Caspian forests are about 405 million m3, average stock is about 213 m3/ha and annual growth is about 3.5 m3/ha. These forests belong to the broadleaf deciduous biome, which is widely distributed from North America to Europe and Asia. These forests receive considerable precipitation, between 750 – 2,200 mm. Temperatures are moderate but there are four well-distinguished seasons. Temperatures during the winter often drop to below 0° C making the winter months the season one of vegetation dormancy for trees. The average annual maximum temperature during the warmest months ranges from 28° -34° C and the average annual minimum temperature during the coldest month ranges from 1° -2° C.
Studies on animal husbandry indicate that there are 33,100 traditional animal husbandry units with 5.7 million domesticated animals in these forests. Forest dwellers are engaged in animal husbandry and agriculture activities. All of Iranian forests are nationalized and the Forest, Range & Watershed Organization of Iran (FRWO) is in charge of rehabilitation, harvest scheduling and supervision of forests. The execution of industrial forest projects accompanied by traditional exploitation by the rural community has widely destroyed the northern forests. Even the enormous investments by the forest industry during the past twenty years have not led to a policy of forest conservation because of the insufficient attention given to the specific socio-economic problems of the rural population.

Iran is a member of the OPEC, and ranks amongst the world's top three holders of proven oil and natural gas reserves. Iran is OPEC's second-largest exporter after Saudi Arabia, and is the fourth-largest exporter of crude oil globally after Saudi Arabia, Russia, and Norway. Natural gas accounts for half of Iran's total domestic energy consumption, while the remaining half is predominately oil consumption.



Total Energy Consumption in Iran, by Type (2004)

Source: EIA International Energy Annual 2004

Project definition:

With above mentioned information about Iranian forest and energy sector, rational policies are required in order to manage the forest.

#1
An interesting research topic could be the conflict between state and forest dwellers in Iranian Caspian forests. The Iranian state views forest dwellers as encroacher and unfits to take care of forest resources. Recently the state is trying to withdraw forest dwellers from the forest. There is a conflict of to visions. One is a vision of human as outside the forest and the other is integral to the forest. Eviction of forest dwellers may not a solution for forest degradation. The focus instead should be on devolving rights to the forest dwellers to contribute in forest protection and wise utilization. This subject could be investigated in this research project.

#2
One may conclude that substitution of fusilfuel with bioenergy is not priority for Iran as this country is world's top three holders of proven oil and natural gas reserves. However everybody knows that one day these fusilfuels will be run out. This topic could be one direction of our study plan about the sustainable forest policy with consideration of energy in this country if it is profitable to produce biofuels from forest raw material and other resources.

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Nepal

Modeling of Carbon Sequestration under Clean Development Mechanism in Community Forest in Nepal

by

Ram Asheshwar Mandal

(The following text is a section of a project suggestion from Nepal.)

Background

Globally, increases in Green House Gas (GHG) in the world, is the major cause of global climate change. Carbon dioxide, methane, nitrous oxide, hydroflurocarbons, perflurocarbons and sulpherhexafloride are the main components of GHGs. Among these components, the major one is carbon dioxide which occupies about 0.03% of the atmospheric volume. In this context, the astonishing point is that, the carbon dioxide gas had increased by 25 % since pre industrial era (UNFCCC, 1992). There are two main causes of the increase in GHGs production. The first cause is the burning of fossil fuels and the second cause is the depletion of forest which contributed about 10-20 % GHGs emission in the world (IPCC, 2000b). This means that, the industrialized countries are responsible mainly for the first causes and the developing countries are responsible for the second one. Consequently, industrialized countries and developing countries both are accountable for the production of GHGs. The increasing amount of GHGs has serious effect on climate change (INCFCC, 1992).

The GHGs have many adverse effects on atmospheric environment. The resulting environmental effects are climate change, increase in mean sea level, alteration of weather, global warming etc. In addition, cumulative and long term impacts of these effects are serious increase in pollution and finally the suffocation for living being to survive (Tamara S. L., 1999). Therefore the mitigation of climate change is essentially required.

There are three major mitigation measures which have been effective under Kyoto Protocol against GHGs emission. These measures are Emission Trading (ET), Joint Implementation (JI) and Clean Development Mechanism (CDM) (INCFCC, 1992). Among these mechanisms, CDM has been working to support in sustainable development project in developing countries for their CO_2 reduction (Gundimeda H., 2004) but it doesn't mean that all types of projects are eligible under CDM. The basic criteria of CDM consideration are that, the afforestation and reforestation projects which are certified as reduction and deforestation as an emission (UNFCCC, 2005). Though, community forests have a significant role to contribute in CO_2 reduction, such forests have not yet accounted under CDM (Skutsch et al. 2003). In this regard Nepal and India has been working to estimate carbon in community forest in order to show and monitor the carbon (Kamal, et al 2007).

Problem Statement

The global annual deforestation is 8868 thousands ha in between 1990 and 2000 (FAO, 2001) and 7317 thousands ha in between 2000 and 2005 (FAO, 2005). The people's participation has been playing an important role to cope with this type of serious problem. The community forest management is the best practical example of people's participation in forest management (Yadav N.P., 2004) because this practice has also being contributed in CO_2

reduction as like afforestation and reforestation project. However, this type of community forest management project is not eligible yet under the CDM support (Skutsch et al. 2003). Though, issues of environmental services are raised after as Reduction of Emission through Deforestation and forest Degradation (REDD) (CAN, 2007) in Bali with four building blocks of negotiation such as mitigation, adaptation, technology transfer and funding (Bali 2007).

There are different models of community based forest management in Asia. Some examples are joint forest management, Van Panchayat, collaborative forest management, community forest management, participatory forest management, leasehold forest etc in India, Bangladesh, Bhutan and Nepal (Mahat T.B., 1987; Gilmour and Fisher, 1991). Though there are different types of community forest management models, their final environmental contribution is the reduction of atmospheric CO_2. This environmental contribution is always raised as issues to consider as credit under CDM. However, this contribution in environment is not considered yet.

Nepal is the pioneer of community forest (Mahat T.B., 1987). Some community forests in Nepal, have been working in preparation together with India so that they can claim under CDM (CHEA, 2003; Sharma et al. 2004). In this context, the major essence of research is to assess and explore the type of preparation to approach to CDM. This research includes two major existing positions of CDM in Nepalese community forest ground. Firstly, the research covers to explore the preparation in community forest and secondly existing alternative energy models which have already been supported under CDM.

The preparation in community forests to claim under CDM might take a long time. In addition, more practical and scientific research and effective efforts are also required. However, there are still three types of existing possibility which meets CDM criteria. Firstly, there are some plantations which have been created after 2000'. About 3 thousands ha of community plantation was carried out in between 2000 to 2005. These plantation areas have been already managed under community forest management scheme (DOF, 2005). Hence, this indicates the essence of the study is to prepare the data base of such types of eligible community forests so that a claim can be made under CDM. Secondly, another potential model is the immense afforestation areas existing as open lands. Thirdly, afforestation models also already exist as private plantation on private lands. About 177 ha private plantations have been created in between 2000 to 2005 (DOF, 2005). Such types of plantations which have been created after 2000 have a right to claim under CDM (Satyanarayana, 2003). But these projects are not effective yet due to the lack of clear and complete records. Therefore, the essence of the study is the assessment of private plantation areas created after 2000 and also prepares the record so that it can assist to link with CDM payment. This research includes areas of private plantation, status of these plantations and the benefit which will support and promote livelihood from such projects. Correspondingly, the leasehold forest as well as land allocation in CF also meet similar criteria and hence similar study is essential.

There are some important common tree species in community forests. These species can be categorized into three main types. Firstly, the species *Shorea robusta* are found in Terai, *Pinus roxburghii* in Hills and *Pinus wallichianain* in Himalayan region. There are no carbon sequestration models on these species in Nepal until now. Therefore, it is too essential to make carbon sequestration models of these species so that carbon sequestration in community forest can be assessed. In addition, the research also includes branch models of pines and pole models of *Shorea robusta*.

The last but very important point is the legal aspect of CDM modeling. Nepal's CDM policy is like as an infant and narrows in comparison to international and global policy. Nepal has not started to prepare any legal framework on CDM besides ratification (MOPE, 2005). However policies regarding environment has some sort of provisions but it is not tied with the CDM policy. In addition, Readiness Plan Idea Note has been approved by the environmental society (Jagdish, 2008).Therefore, existing policy regarding environment should be assessed. This assessment includes finding the gap in policy between national and international, also quantifying the level of benefits in community and living status under existing policies.

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P.R. China

General conditions and problems in Chinese forestry

Fadian Lu

In the last few decades, forestry development in China is very fast due to support from government. Both the people and government realized the important of forest and invested much more money to it. Now, China has the biggest artificial forest area in the world. The mile stone of forestry development in China is the initiation of the "six big forestry programme(or project) in 2002, after that the investment to forestry has increased dramatically. Also, the exploration of multi-function of forest has been paid more and more attention, especially the ecological benefit of forest. People gradually understand the important role of forest in dealing with the problem like global worming, bio-energy, environment protection. In the traditional forestry area of northeast and southwest, the annual cutting volume was reduced very much in order to restore the rational forest resource. Now, forest certification, reform of forest ownership and management system, subsidy to forest owner for the ecological benefit created by forest, and to whom return fame land to forest and so on are the major efforts from the government to increase the forestry development.

However, there do have many problems in Chinese forestry development.

1. How the forest should be managed when its main object is environment protection? The current management form is not allowed to touch the forest at all(no thinning, no harvest, no idea of the regeneration methods). Optimal management model should be studied.
2. After the reform of ownership of collective forest(own by local government like village,), the management scale is very small, and there will be some new problem although its has the advantage to increase the enthusiasm of the forest owner.
3. What is the optimal management model when consider both wood and other products, and the environment functions, the rotation age, the decision of thinning and final harvesting should be different. But not clear at the moment.
4. What the forest resource from the "six big programme" should be managed? Since their investment, forest structure are different from normal forest, we must try to find optimal management form for it.
5. China import enormous forest products from other countries, and this will affect the forestry situation and environment of the whole world. International effect of Chinese forestry should be studied.
6. Optimal ecological subsidy implementing models need to be investigated.
7. More international cooperation about forest management in the new situation is necessary.

For more and detail information about Chinese forestry, you can check the reference attached to the same email.

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Russian Federation: ***Komi Republic***

Dear Peter,

I suppose we should speak in our project not only Russia as a whole but the Komi republic as well. Komi republic is a leading center of the wood industry in the north-west area of Russia. Our republic has almost half recourses of adult wood and overmature on the European part of Russia. Wood area is 28.8 million of hectare. The rated cutting area in the republic is near 26 million cubic meters. However, the main problem of the republic wood sector is the low intension of wood resources usage. The accepted in the world practice parameter of the removed wood from 1 hectare of the wood cover area in the Komi republic is 0.24 m^3. Volumes of throw from 1995 to 2005 were reduced in 3,4 times. For today timber cutting in Komi makes 6,5-7 million cubic meter a year. It is that volume under which in republic there are capacities on processing wood - from wood sawing to manufacture of pulp-and-paper production. When we say that timber cutting is seven millions cubic meter a year, we mean, that in Komi there is free economically accessible cutting area in volume of 8-9 million cubes a year. But its development is possible only if the republic has the necessary capacities on processing wood and, first of all, its balance component. The pulp-and-paper branch of republic is presented mainly by Open Society " Mondi Syktyvkar Timber Industry Complex " which is capable to let out up to 700 thousand tons of pulp-and- paper production annually. Two republican plywood manufactures - Syktyvkar plywood factory and Zheshart plywood industrial complex - are on the first positions in the country. Knyazhpogost fiberboard factory has successfully been developing.

Release of separate kinds of production of processing manufactures

	1975	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007
Saw-timbers, thousands of m^3	2555	2518	2632	2483	934	762	693	598	638	676	743	761	931
Plywood, thousands of m^3	74,3	74,5	79,9	107,0	52,5	175,1	198,6	221,3	249,2	276,5	322,0	324,3	326,2
Wood-fiber boards, mln of conventional m^2	8,7	20,3	33,9	35,3	13,0	20,8	22,2	20,1	20,0	25,7	27,6	28,6	28,1
Particle boards, thousands of conventional m^3	67,7	228,0	370,3	330,9	167,9	207,5	215,6	258,2	295,1	305,5	273,2	379,3	410,6
Paper, thousands of tones	163,5	192,0	351,2	510,3	381,7	460,2	500,0	528,4	525,9	578,5	600,7	610,7	638,5

The main problem of a wood complex of Komi Republic is that 60 % of cutting area fund consists from small-scale, bad quality and soft leaves wood which creates significant

problems in its use and are constrained with development of all timber industry complex of the republic. There is a problem of overproduction in timber cutting and, first of all, it is a question of balance raw material. Such kind of raw material in republic is processed only by Open Society « Mondi Syktyvkar Timber Industry Complex », but also its capacities are limited by volume in 3-3,5 million cubic meters a year. In connection with the fact that the most part of balance raw material does not find demand, a unique output to improve the position of lumberers is to create large processing manufactures.

The target program of wood branch development has been developed by the management of Komi Republic for the period up to 2015. In “Strategy of timber industry complex development in Komi till 2015” lumbermen intend to increase capacities under that volume of wood preparation which can be developed at favorable circumstances to the specified term in Komi. According to the strategy the volumes of preparation in Komi in 2015 should be increased up to 14 million m^3. By 2015 the realization of 24 investment projects is planned in ten areas of Komi.

The company management "Mondi" declares the realization of civil-engineering design of a cellulose factory. The realization of this project will allow the complex to increase manufacture of cellulose three times and to become the largest pulp-and-paper combine in the world. The civil-engineering design of Udorskiy cellulose factory and Troistko-Pechorskiy cellulose -cardboard complex are included in the federal target program of timber industry development in Russian Federation.

Preparation for realization of some major investment projects in the territory of republic, connected with wood, allows predicting that the wood industry will develop dynamically. The wood is the main natural resources in Komi Republic and which is the target rate in immediate prospects.

I should add that the opportunities to use the wood pulp in bio-energetics are underestimated, and they play a great role in Komi. In my opinion it is a very perspective direction. We shall be very grateful to you to participate in this project and to use this knowledge preparing our students.

There are useful sites on this topic:

www.forestkomi.ru/
http:// www.komistat.ru
http://komles.rkomi.ru/

Best regards,

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Spain

CONSIDERATIONS FORM A SPANISH PERSPECTIVE

Draft 1

1 General information

Spain has suffered since the oil crisis of 1973 a strong energy dependence. The domestic sources of oil are neglectable and of coal of a bad quality and high extraction costs. Imports of oil, gas and coal are one of the main imports of the Spanish economy. Nuclear energy has a significant contribution but due to the moratoria applied most of the 10 plants are almost outfacing. Renewable energy has been identified and promoted by strong public policies only in the past 5 years. Nevertheless the development has been significant, being Spain the 2nd country in the World in wind energy. The fluctuations of the wind force and the inflexibility of nuclear plants generate problems of insufficient or excessive offer regarding to the demand.

Climate change is predicted to have strong impacts on Mediterranean and subtropical countries strengthening draughts and increase of temperature and by it of forest fire risk as well as the outspread of diseases due to a general labialization of forests.

Rural areas have suffered during the past 50 years in Spain a strong regression in economic, social and political terms. Despite a reasonable average of 90 inhabitants/km2, Spain has mostly 2 kinds of areas regarding population settlement, about 10% of the country has densities similar to the dense populated areas of Asia (>500 inh/km^2) and most of the rest of the remote areas of Scandinavia (<10 inh./km^2). Forests dominated rural areas are in an even worse situation as their natural conditions are more difficult than the agricultural dominated areas (mountainous areas, poor soil areas). The asymmetry of the EU-CAP strengthens the effects harming the forest dominated areas. Natura 2000 and other protective measures due to the lack of compensatory mechanisms contribute also to the desolated situation of many rural areas in Spain.

2 Relevant statistics

2.1 The energy production in Spain

See above (if you need further figures, please let me know)

2.2 The forest cover in Spain

Spanish forests cover almost 35% of the country or 17,5 M ha. This area has grown over the past 35 years from 5,6 M ha. The wood stock is almost 1 B m2, increasing more than 100% since the first forest inventory in 1970. Forests are located in mountain areas and show big differences regarding tree composition and productivity (from high productive poplar and eucalyptus plantations to subdesertic open shrublands).

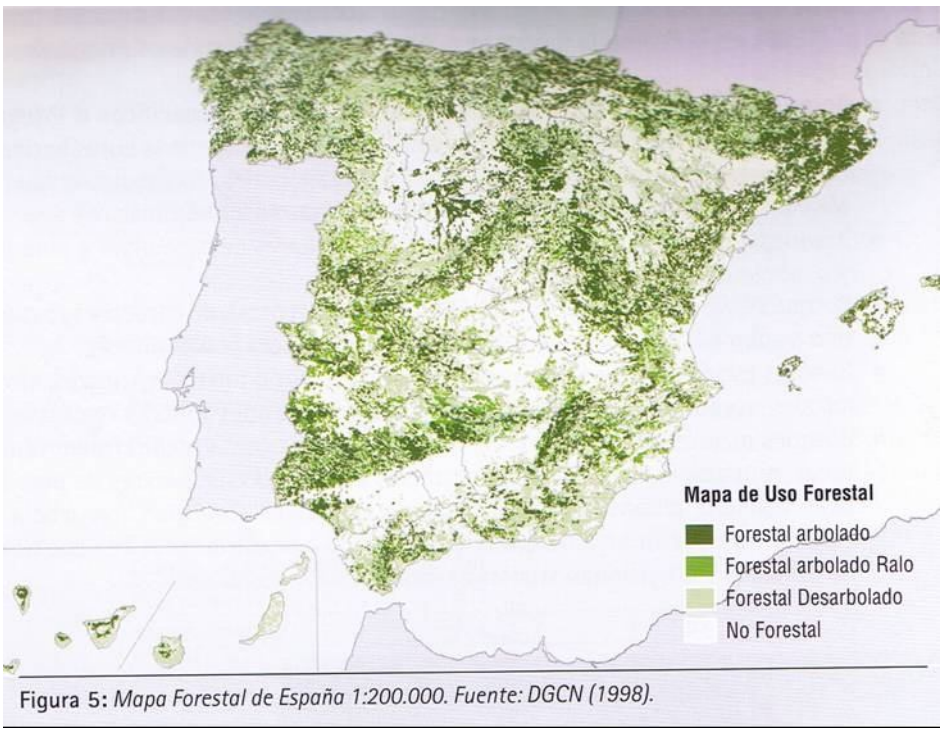

Figura 5: *Mapa Forestal de España 1:200.000. Fuente: DGCN (1998).*

2.3 Forest based industries

Spain has a relevant forest industry in all sectors (sawn mills, pulp and paper mills, chip board factories, furniture, cork, etc.). Despite it with exception of cork in the rest of subsectors imports are growing more than exports. Forest based industries are about 10% of the industrial GDP and labor force.

2.4 Employment

Employment is a key issue of Spanish economy. Presently 19 M persons are employed (42% of population) and 4 M unemployed (17,7%). Unemployment increased strongly in the past year (almost doubled). About 30.000 are employed in forestry and 300.000 in forest based industries.

3 Topics of special interests for Spain

- how to overcome the bottlenecks for a generalization of the forest based biomass for energy as a key element of renewable energies
- how to measure and incentive the contribution of forests as carbon sinks in Europe
- how to measure the contribution of the forest sector as driving motor for rural development in disadvantaged areas (benchmarking)
- how to measure the contribution of the forests sector to environmental externalities (payment for environmental services) and its implementation

4 References

5 Contact information

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South Korea

a. I agree with your proposal and like to join the project team as the research leader of S. Korea. Some of my friends with PhD and a couple of graduate students may join the team.

b. In Korea, we have some domestic research project teams for climate change and regional development launched and funded by Korean government. I am joining most of the domestic team projects. The research topics includes temporal and spatial changes in land use patterns, evaluation of forest scenic beauty, evaluating the potential of forest land functions and modelling wood-processing for biomass estimation.

Forest-Sector Global Warming Countermeasures in South Korea

It is highly predicted that there should be big pressures to South Korea on undertaking obligations for GHG emission reduction during the post-2012 period as a member of OECD and the 9th country in the world on GHG emission amounts. Coping with this international atmosphere, the new Korean government announced 'Low Carbon, Green Growth' action plan and furthermore has been trying to make effective policies for climate change countermeasures with a pan-governmental project.

Currently there has been increasing concerns about forest as a carbon sink and a lot of efforts to find efficient methods for afforestation, reforestation and forest management. Among them, construction of national GHG inventory in forest sector has been considered important above all, since it enabled us to figure out the current situation and moreover what policies to be required. Particularly, South Korea has already been afforested / reforested since 1960's according to national restoration policy. However, the demand for construction sites to build plants, roads and residential places has grown fast during the last three decades and forest land has been reduced rapidly. Forest land use change should be one of main issues to cope with carbon sequestration problems.

In addition, lots of efforts have recently been made to develop clean and renewable energy sources, whereas South Korea mostly depended on fossil fuel until now. Especially bioenergy from timber products has been much interested, but specific and systematic framework hasn't been built yet in Korea. In order to actualize and commercialize the bioenergy, there should be more scientific researches on flow of wood raw materials in timber manufacturing process and furthermore evaluation system for carbon amounts and its value on it.

As one of the urgent and significant strategies for global warming countermeasures in forest sector, South Korea should figure out patterns of forest land-use change and analyse effects of them on carbon stock amounts. Additionally, realistic possibility and benefits of bioenergy from timber products should be diagnosed based on development of framework and systematic analysis of the whole processes.

We are aiming to research them at tier 3–level as follows.

- Assessment of carbon budget according to forest land-use change
  - Constructing database on temporal and spatial patterns of forest land-use change in various scales
  - Accounting carbon budget from the above database of forest land-use change

- Assessment of carbon budget according to timber manufacturing process
  - Analyzing flow of wood raw material in the whole timber manufacturing process
  - Accounting carbon budget from the use of biofuels and analyzing substitution effects of bioenergy

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Sweden

Observations and suggestions from a Swedish perspective

Peter Lohmander

From a Swedish perspective it is interesting and important to investigate the best way to manage the forest resources when we consider the forest and energy industries. Furthermore, the activities in this system also influence the CO2 balance and the level of risk in different dimensions in our society. In order to determine what to do in Sweden, it is necessary to consider options to import and export raw materials and finished goods, such as forest industry products and energy, to other countries.

A general finding is that there are large physical options to strongly increase harvesting in the forests in Sweden. This can be done in a sustainable way. In Sweden, we harvest much less than the forest growth and we have never had more forest raw material than today.

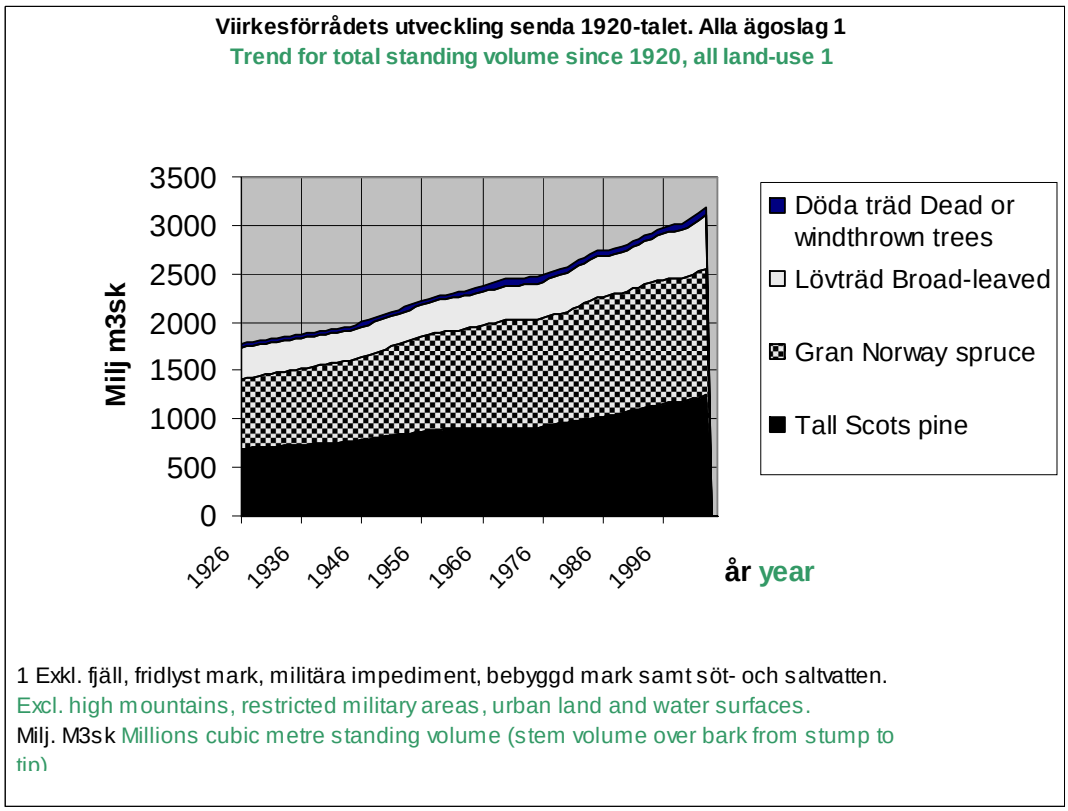
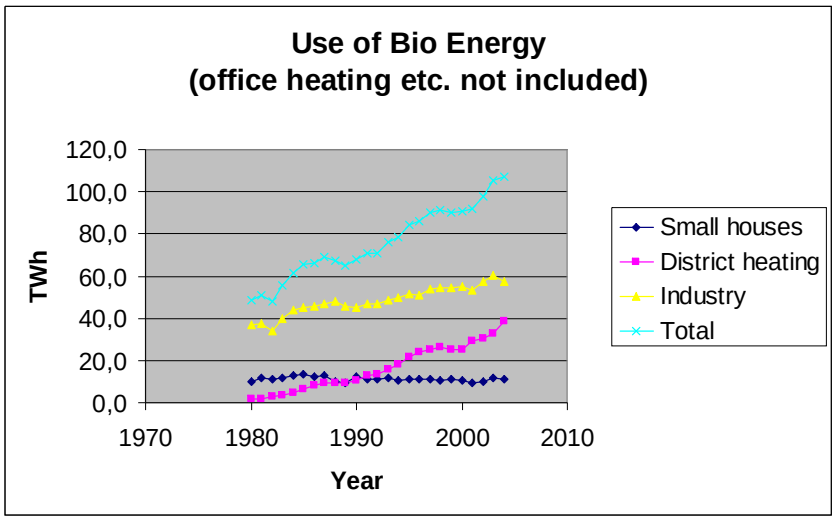


Figure Sweden 1.
In Sweden, the standing volume in the forest has increased very much during a long time period. The stock level is still rapidly increasing.
Source: Swedish board of forestry.

With different economic optimization models, based on Swedish conditions and without consideration of international raw material flows, it has been found that it would be rational to strongly increase harvesting and the capacities in the forest and energy industries.

There are large physical options to strongly increase sustainable harvesting in the forests in most Europan countries. This is true in particular in Russia, and also to the east of Ural. In many European countries, the harvest is approximately 50% of the growth and the stock rapidly increases.



Source: Swedish Energy Agency: "Energy in Sweden, Facts and Figures 2005" 27

Figure Sweden 2.
In Sweden, the use of bio energy is rapidly increasing. This has already been going on for a long time.

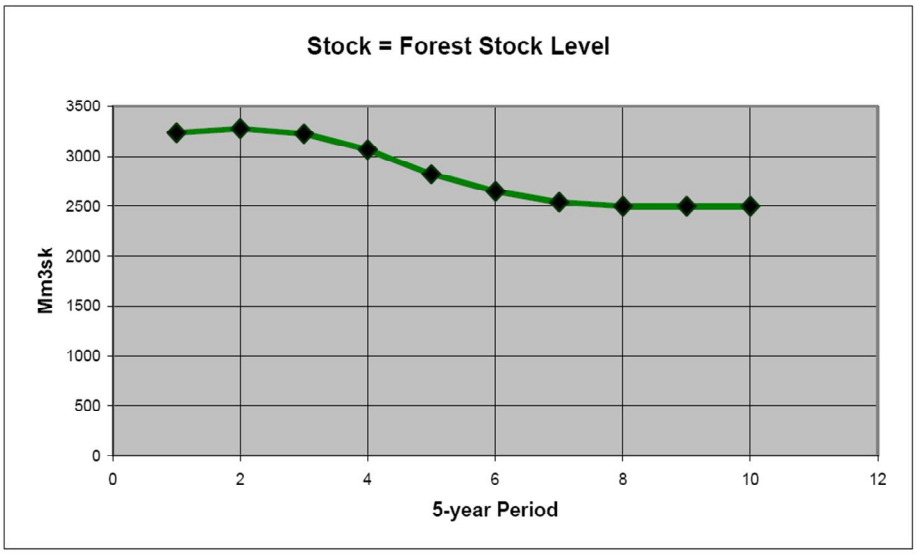


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Figure Sweden 3.
A national dynamic forest and energy sector model has been developed in Sweden. With this model, the economically optimal stock development has been determined under specific parameter assumptions. Source: http://www.lohmander.com/EON_090511.ppt

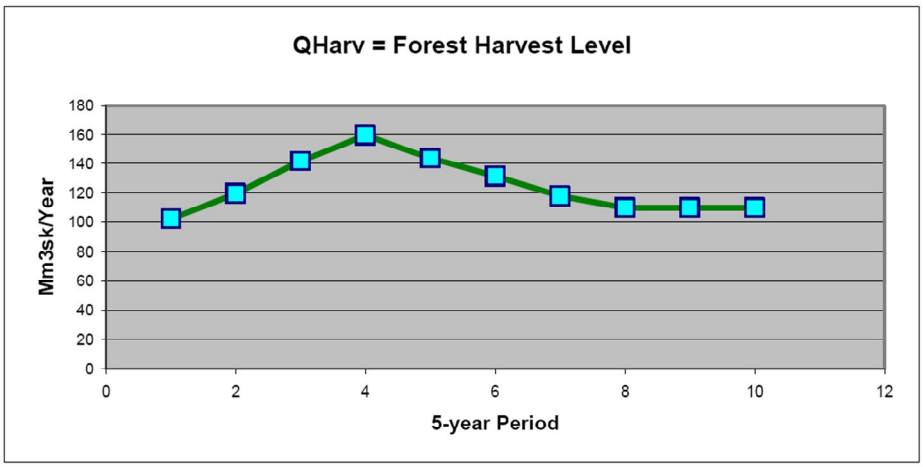

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Figure Sweden 4.
The graph shows the economically optimal harvest level in Sweden that is consistent with the stock development found in Figure Sweden 3 under specific parameter assumptions.
Source: http://www.lohmander.com/EON_090511.ppt

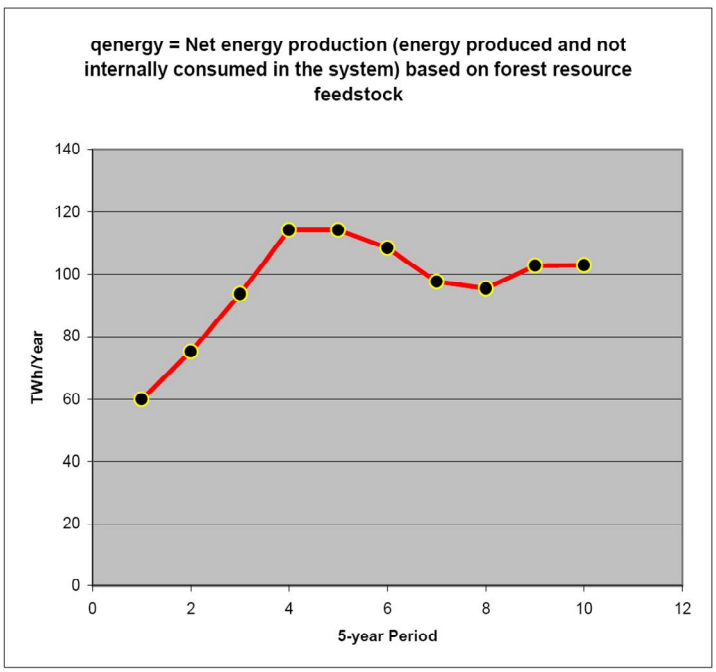

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Figure Sweden 5.
The graph shows the economically optimal development of Swedish energy production based on forest feedstock according to the national dynamic forest and energy sector model under specific parameter assumptions.
Source: http://www.lohmander.com/EON_090511.ppt

In Russia, the potential sustainable long run forest harvest level is more than ten times higher than the present harvest level. (This potential yearly harvest is almost 3 billion cubic metres, which is almost the same as the total forest stock in Sweden.) In many European countries, the harvest costs and most other costs in forest management are several times higher per cubic metre than in Sweden. This can partly be explained by very strict regulations and often a complete lack of profitability targets in the forest sector. EU will strongly increase the use of renewable energy. This will most likely, very soon, lead to high prices in the European market for all types of energy inputs from the forests, including pellets, logs, chips, waste wood etc.. In case Russia undertakes expansions in infrastructure, the forest and bioenergy sectors, very large volumes of all types of energy inputs from forests can be expected to be transported from Russia to EU. The Russian expansion in these sectors ***may*** however take considerable time. This is a very important and uncertain factor of considerable importance to the optimal decisions in the forest and energy sectors in Sweden and other European countries. Several studies of rational expansion of the forest and energy industry sectors have been made with consideration of the CO2 issue and global warming.

A general finding is that the most rational way to use the forests may be to increase harvesting in the presence of the CO2 problem. With increased harvesting, you may replant the areas with more rapidly growing plants that can absorb more CO2. Furthermore, you can reduce the use of fossil fuels. You may even use CCS, carbon capture and storage, to store the CO2 permanently after energy production. With increased harvesting, you also obtain more logs that can be used to store CO2 in the form of bridges, houses and other constructions for considerable time. Later, when the constructions should be replaced, the material can be used to produced energy, perhaps also with CCS. In order to obtain more rational plans in Sweden, the national model should be expanded to include raw material flows between Sweden, other countries in EU and Russia. The new and more detailed regional energy potentials should be integrated in the regional model. Alternative forest management methods should be investigated within the optimization models.

References:

http://www.lohmander.com/Information/Ref.htm
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USA

Forest Sector Policy Analysis in the United States of America

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The need for an international forest policy analysis group has never been greater. With a new national administration starting in January 2009 the forest sector policies will undergo some flux. Existing national laws will still be in place but the emphasis and priority of the Obama administration will probably not be directly on the forest sector. However, indirectly the forest sector will be key in many of the proposals that are being put forward to improve the economy of the United States. First there is an emphasis on mitigating climatic impacts of burning fossil fuels and along with this there is an emphasis in lessening the USA's dependence on foreign energy. The forest sector is expected to play a significant role in supplying bioenergy to the USA's economy. The emerging bioenergy industry is seen as a growth industry in this time of economic trouble.

Carbon "Cap and Trade" regulations are starting to be developed in the USA. The role of the forest sector to serve as a carbon sink is well recognized, but the development of a rational credit algorithm is far from a legal settlement. The Society of American Foresters has made the following recommendations to the Obama Administration:

- Using forest biomass for energy can offset use of coal, natural gas, gasoline, diesel, and fuel oil. At the same time, its use can enhance domestic economic development by fostering new industries making bio-based products.

• Forests can also reduce GHG concentrations by sequestering atmospheric carbon in biomass and soil, and the carbon can remain stored in any wood products made from harvested trees. Because the area of US forests is so vast—33 percent of the land base— even small increases in carbon sequestration and storage per acre add up to substantial quantities.
• Reducing wildland fires, a major source of GHG emissions, prevents the release of carbon stored in forests. Active forest and wildland fire management strategies can dramatically reduce CO 2 emissions while also conserving wildlife habitat, preserving recreational, scenic, and wood product values, and reducing the threat of wildfires to communities and critical infrastructure.
• Products from sustainably managed forests can be replenished continually, providing a dependable supply while supporting other ecological services, such as clean water, clean air, wildlife habitat, and recreation.
• More carbon is stored in forests than in agricultural or developed land. Preventing landuse change from forests to non-forest uses is thus another way to reduce GHGs

The supply and demand for forest products are undergoing change as a result of the economic down turn. This is recognized as a cyclical effect and will change, but the shift in forest ownership from large forest products industries which had a vested interest in forest health to private investors whose main interest was in rate of return on investment has some negative consequences, one among these is that land put into "higher and better use" (HBU) goes out of production, shifting supply to other sources. The Society of American Foresters has made the following recommendations to the Obama Administration:

- Federal tax policies affecting the nation's private forests must recognize: the challenges and issues associated with forest management and ownership; the need for equitable tax treatment among the various types of private forest land owning entities; the legal, institutional, and economic setting within which timber harvesting and forest management is practiced; the importance of continuously improving forestry and timber harvesting practices to protect and enhance ecological, economic, and social forest values; the impact that tax policy can have on international competitiveness and the influence tax policy has on the retention of forest lands.
- Tax policy should encourage forest ownership and preservation of forest land

The American people are very interested in forest ecosystem services and not just the provisioning services of timber, water, fuel and food, but the regulating services such as climate, flood, desease regulation and the cultural services such as aesthetic, education, spiritual and recreation and endangered species protection. However, other than timber and hunting land owners do not receive any direct income from vital ecosystem services. Methods for protecting and providing ecosystem services have been created but are still in a state of flux.

Reference:
Society of American Foresters Forest Policy web page
http://www.safnet.org/policyandpress/policy.cfm