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REPORT

**“Regional approaches to sustainable landscapes and
green economic growth”
covering activities of REC Caucasus for Armenia, Azerbaijan and Georgia**

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Summary

Article 9 of the European Landscape Convention on “Transfrontier landscapes” states:

“The Parties shall encourage transfrontier co-operation on local and regional level and, wherever necessary, prepare and implement joint landscape programmes”.

This Report “*Regional approaches to sustainable landscapes and green economic growth*” covering activities of the Regional Environmental Center (REC) Caucasus for Armenia, Azerbaijan and Georgia, was prepared by Mrs Nune Harutyunyan, as Expert of the Council of Europe, L.L.M. International Law, M.A. International Studies, is Executive Director at REC Caucasus.

This report has been produced in the framework of the Council of Europe activities for the implementation of the European Landscape Convention.

The Conference is invited to:

- take note of the Report “*Regional approaches to sustainable landscapes and green economic growth*” covering activities of REC Caucasus for Armenia, Azerbaijan and Georgia, prepared in the framework of the Council of Europe Work Programme on the European Landscape Convention, and presented for information purposes.

Regional approaches to sustainable landscapes and green economic growth

Introduction

Finding common approaches for sustainable landscapes and green economic development is a challenging task: peculiarities of South Caucasus, its rich biodiversity, impact of climate change, rich diversity of landscapes and hotspots, unique natural monuments and SPNAs do demand special efforts, common vision and effective action. Regional approaches to sustainable environmental management policies and practices, strategic planning and targeted initiatives for regional growth and green development mechanisms are a set of helpful tools which could serve for preservation of natural landscapes, smart management of natural resources and assets and green economic growth. Regional environmental center for Caucasus has been established to follow this route and unite expertise in South Caucasus using executive power, decision-making, civil society action and academic research for finding appropriate solutions for environment and sustainable landscape management.

1. REC C Mission

The mission of the REC Caucasus is:

- “to assist in solving environmental problems in the Caucasus region through the promotion of co-operation at national and regional level among NGOs, governments, business, local communities, and all other environmental stakeholders in order to develop a free exchange of information, in line with the principles of the Aarhus Convention;
- to offer assistance to all environmental NGOs and other stakeholders;
- to increase public participation in the decision-making process, thereby assisting the states of the Caucasus in the further development of a democratic civil society”.

REC Caucasus has been established within the framework of the “Environment for Europe Process” based on the decision made at the Sofia Ministerial Conference in 1995. REC Caucasus has been established:

- to serve environmental stakeholders within and outside the South Caucasus region: national and local governments, NGOs, media, business, local communities, science, international community, teachers, students, children, etc.;
- to contribute to the improvement of the Caucasus environment by facilitating introduction and implementation of global, European, regional and national environmental policies;
- to provide a gateway for dialogue, networking and co-operation among environmental stakeholders and partners at global, regional, national and local level.

The REC Caucasus serves the following stakeholders in the three States of the South Caucasus region:

- National and Local Governments,
- NGOs,
- Media,
- Teachers,
- Students,
- Enterprises,
- Science,
- Community Based Organisations, as well as the International Community.

2. REC Caucasus at work: serving as a “bridge”

REC Caucasus successfully implements its mission through various programmes and projects throughout the Caucasus region. One of the tasks of REC Caucasus is to serve as a “bridge” between the public and governments. REC Caucasus assists its stakeholders in capacity building through provision of information, advice and expertise and to encourage dialogue, co-operation and public participation in environmental decision-making. REC Caucasus plays an active role in inter-agency co-operation, too. The organisation, together with active environmental NGOs and ministries of the environment, promotes the idea of environmental protection and sustainable development in the South Caucasus States, demonstrating examples and evidence of direct links between environmental degradation/destruction and the growth of poverty, migration and economic recession.

Improving the environment

Since its establishment the Regional Environmental Centre for the Caucasus has implemented about 60 medium and large scale projects in the region which have contributed to policy development, capacity building, facilitation of dialogue and networking, information exchange on environmental issues and supporting the civil society in the South Caucasus states. Capacity building and training of various environmental stakeholders at regional, national and local levels have been provided throughout project implementation. REC Caucasus has strong experience in providing training to different interest groups and has deep insight regarding their needs, demands and constraints.

REC Caucasus is well positioned in the South Caucasus region to assist various national and international organisations to implement their activities targeted at the needs of the region, States and specific stakeholders.

REC Caucasus has strong capacity to address environmental issues related to the Rio Convention and other international covenants, both at national and regional level. REC Caucasus has been addressing environmental challenges in the region through implementation of local and regional initiatives and projects based on a regional approach. REC C strengthens capacity regarding preservation of biodiversity, climate change (mitigation and adaptation), management of transboundary water resources, sustainable management of natural resources, fighting land degradation, disaster risk reduction, sustainable forest management, capacity development and research learning.

REC Caucasus has proved to be a viable and independent partner providing services to governments, local authorities, non-governmental organisations, businesses, international organisations and other environmental stakeholders.

Overview of South Caucasus Region

The South Caucasus Eco-region covers a total area of 186,343 km², extending over all of Armenia, Azerbaijan and Georgia. The Caucasus is one of the most biologically rich regions on Earth. It is one of WWF’s 35 “priority places” and of 34 “biodiversity hotspots” identified by Conservation International as being the richest and, at the same time, most threatened reservoirs of plant and animal life on Earth.

The tremendous diversity of species in the region and many of its ecosystems are increasingly threatened. There is considerable pressure from the exploitation of natural resources and landscapes, creating a priority for maintenance and conservation of natural resources, with the challenge of overexploitation and non-sustainable use of landscapes all over the region. Biodiversity loss is driven by local, regional, and global

factors, so responses are also needed at all scales. Responses need to acknowledge multiple stakeholders with different needs and activities/practices serving their daily needs depending on the nature of their lifestyle. Further progress in reducing biodiversity loss, supporting States and the region of South Caucasus in terms of greening the economy and clean production, as well as sustainable management of landscapes and resources, will come through greater coherence and synergies among sectorial responses and through more systematic consideration of trade-offs among ecosystem services or between biodiversity conservation and other needs of society.

Amazingly rich biodiversity and landscapes are being lost at an alarming rate. Nearly half the lands in the Eco-region have already been transformed by human activity and is subject to severe anthropogenic pressure. The plains, foothills and subalpine belts have been the most heavily impacted. Native floodplain vegetation remains on only half of its original area in the North Caucasus, and only two to three per cent of original riparian forests remain in the South Caucasus. Most natural old growth forests have been fragmented into small sections, divided by areas of commercial forests or plantations, as well as agricultural and developed lands. For the Caucasus as a whole, about a quarter of the region remains in reasonable condition, while less than 12 per cent of the biodiversity can be considered preserved.

In recent years, transition of economy, changing to free market growth, shifting population dynamics and climate change have taken place so intensely and rapidly that the established adaptation mechanisms of the people of the high mountainous regions of South Caucasus are losing their efficacy. The result has been an increased risk of living in poverty, further marginalisation and high migration of mountain populations due to the difficult natural and socio-economic conditions, as well as scarcity of jobs. In the light of the rapidly changing economic, social and environmental context, only economic growth, which is in closer alignment with sustainable development objectives, provides opportunities for using resources better to meet development needs and reduce the vulnerability of socioeconomic systems to environmental change and resource constraints.

Construction of large-scale infrastructures such as hydro-electric power plants, electricity transmission lines and roads, unsustainable logging of forests, overgrazing of pastures, killing and taking of wildlife and pollution all threaten the biodiversity and sustainable management of landscapes within the Eco-region. The situation is aggravated by climate change which has already modified and impacted each and every community, changing the environment, habitats and lifestyles of the local population.

The existing assessments called for the development of the Regional Biodiversity Strategic Action Plan for the South Caucasus as an important mechanism to reduce future risks related to the biodiversity and human wellbeing for the region. The common regional approach initiated by the REC Caucasus, which is in the process of elaboration of the Regional Strategic Action Plan for South Caucasus in parallel with green economic development initiatives, is supporting States of the South Caucasus in identification of potential risks to priority ecosystems, as well as regular land consultations on potential co-ordinated measures and prospective initiatives, including sustainable landscapes, prevention of land degradation, water and forest ecosystems, etc.

REC C has been working since 2009 to introduce Ecosystem Services (ES) which produce benefits for people from ecosystems - ecosystem valuation (TEEB), payments for ecosystem services (PES) into the list of urgent mechanisms supporting biodiversity and landscape conservation within the regional and national level co-operation agendas: these methodologies support a combined approach between the environmental and economic benefits introduced by the population. Currently the discussion of issues related to ecosystem functions (services), including their valuation, potential sellers, definition of compensation mechanisms and the formation of markets for the provision of such services are actual.

Ecosystem services have no standardised definition. “Ecosystem services”¹ include provisioning services such as food, water, timber and fiber; regulating services that affect climate, floods, disease, wastes and water quality; cultural services that provide recreational, aesthetic and spiritual benefits; and supporting services such as soil formation, photosynthesis and nutrient cycling but might broadly be called “the benefits of nature to households, communities, and economies” or, more simply, “the good things nature does”².

The Ecosystem approach³ piloted by REC Caucasus within TEEB regional project and pilot initiatives implemented in co-operation with government agencies, local communities and forestry professionals, was based on a complex strategy of soil, water and sustainable forest policies and practice that promotes their conservation and sustainable use by the local communities in South Caucasus region.



Pic. South Caucasus - Landscape restoration in Tavush (Armenia) and Racha (Georgia) regions

¹ Based on this global value of renewable natural capital is assessed. Ecosystem services are interpreted as material, energetic (energy) and informative flows arising from the reserves of natural capital that combined with physical and human capital ensure society's well-being.

² Fundamental research dedicated to Ecosystem Services Economics among which are UNEP's work “Millennium Ecosystem Assessment, 2003-2005”, “The Economics of Ecosystems and Biodiversity” (TEEB), 2008 EU project, elaborations by WB environmental department and IUCN etc.

³ First classic definition of ecosystem services and economic valuation belongs to Constanza R (Costanza et al., 1997): He brought forward the term “ecosystem approach” for the classification of natural capital according to which ecosystems are considered as structural units of natural capital.

Preventing land erosion and degradation in South Caucasus



Land degradation has been recognised as a major global environmental threat. The biodiversity of the Caucasus eco-region that has global significance is being lost at a rapid rate; the level of desertification - deforestation and loss of biodiversity - is alarming. The recent inventories and studies revealed that the South Caucasus region faces critical challenges due to the degree of desertification and threats to its fragile ecosystems (specifically the mountain ecosystems, forests, wetlands and related biodiversity) that are largely caused by poverty, unsustainable nature resource management and improper agriculture practices as well as climatic

factors.

The forms of land degradation such as desertification, wind and water erosion, landslides, overgrazing, soil exhaustion and others are found all over the South Caucasus region. The land degradation heavily affects local households, leading to decreased land fertility, lower yields, low quality crops and, finally, an increase in poverty. Land degradation, especially desertification, has triggered migration of the rural population (especially from the mountainous regions), disrupted economic development prospects, aggravated regional conflicts and instability, and threatened the lives and livelihoods of local people. The problem is complex and calls for environmental, social and economic analyses and elaboration of effective regional and national action plans.

The need of regional co-operation in combating desertification has been stressed at the International Conference on the Issues of Draught and Desertification in the States of the South Caucasus hosted by REC Caucasus in 2002. Even though desertification has intensified over the past years in the South Caucasus region and vast areas are now degraded, no measures have been taken at the regional level to address this problem.

3. Focal Areas

Biodiversity and forests

REC C has been working in the focal areas of biodiversity and forest conservation/sustainable forest and landscape management since its establishment. One of the targeted regional initiatives was entitled 'Fostering Community Forest Policy and Practice in Mountain Regions of the Caucasus', and covered South Caucasus States and the Russian Federation. The project pilot communities were located in Communities of Koghb and Juevan in Armenia, Shahriyar in Azerbaijan, Chiora, Glola, and Ghebi in Georgia, Dakhovskaya, Khamyshki, Uts-Sakhray and Sakhray in the Russian Federation.

The overall objective of this initiative was to foster community forest policy and practice to address deforestation and climate change issues, secure land tenure and forest rights, rural poverty reduction, conservation and sustainable development needs of local communities.

The specific objective was to respond to current demands of the States in:

- 1) Elaboration of relevant institutional, legal and technical systems for community forest management,
- 2) Awareness-raising and capacity building of local communities and local authorities on sustainable forest management and
- 3) Demonstration of best approaches/methods of immediate reforestation and landscape restoration in areas affected by land-slides, mudflows, avalanches and other natural disasters preventing measures.

The project was focused on development of new institutional, legal and technical systems for community forest management and, in particular, support securing land tenure and forest rights of local communities, implementation of institutional arrangements and land use policies for forest conservation and sustainable use. There is also project supported awareness-raising among local communities and local authorities regarding sustainable forest management, as well as its relation



and impact on other fields such as climate change, poverty reduction, sustainable development etc. In addition immediate reforestation measures under the project can solve such problems as land-slides, mudflows, avalanches and consequently protect populated areas from natural disasters.

The Fostering Community Forest Policy and Practice project envisaged three generalised forms of community forestry which could be suitable for the target States depending on the specific setting:

- *Form 1* - Community involvement in forest management decisions. The state or local self-governing body forest management organisation manages the forest territory and involves the local population in forest management decisions through consultation supported by awareness-raising actions and making information about proposals affecting the forest easily accessible. The local population continues to exercise any already existing legal or customary rights, for example collecting non-wood forest products for household use. The forest management organisation may provide the population with essential products such as fuel wood free of charge or at a subsidised price.
- *Form 2* – Community involvement in taking care of the forest in return for a share of the benefits. As Form 1, but with the additional attribute that the population, represented by a community-based organisation, shares responsibility for taking care of the forest territory or part of the forest territory with the forest management organisation and receives some benefits in return. The benefits could be in the form of a share in the income from sales of forest products or the right to take a certain quantity of products which the community organisation could process and sell.
- *Form 3* – The community is responsible for managing the forest. Responsibility for managing the forest territory is transferred to the population represented by a community organisation under a long term agreement and the population is entitled to use all of the products provided by the forest while the agreement remains in force.

Community forestry also covers settings in which forests are owned by communities. Community ownership of forests is not included in this document but many of the guiding principles and recommendations are relevant.

Choosing which form of community forestry to implement

The form of community forestry which is most appropriate for a particular forest territory in a particular State depends on the contribution which the different arrangements can make to achieving national development and environmental protection goals and on the capabilities of communities and the character of the forest territories around them.

Contribution to sustainable development and environmental protection goals

Community forestry offers a variety of opportunities depending on the form in which it is implemented. The importance of the opportunities will vary from State to State; the contribution which the different forms of community forestry can make will also vary. The importance will depend on policies of the government, economic conditions in the Etat, and the condition of the Etat's forest resources, the Etat's social history and other factors.

Healthier state budgets

Community forestry in all its forms can help to reduce state spending, for example by reducing the costs of dealing with conflicts between communities, restoring natural landscapes and the responsible forest management organisation, by transferring some costs to a community organisation. However, community forestry requires additional spending on awareness-raising, consultation mechanisms, and technical and financial support to community organisation also targeting improved landscape management and tools/knowledge in support to capacities of each community. Spending on supervision may also have to be increased to ensure that community forest managers comply with laws governing the use and protection of forests. Implementing community forestry as a means of reducing current state spending is therefore not recommended.

Reforming the role of the state

Transferring management responsibility to communities can be a key element in reforming the role of the state. By removing themselves from any commercial interest in forests, state organisation can concentrate on the 'core businesses' of government, creating an environment that enables private, including community, actors to deliver public policy objectives. Resources freed up in this way can be used to increase investment in other roles such as regulation, extension, research, and monitoring.

Poverty reduction and improved rural livelihoods

Community forestry in the form that involves the population in forest management decisions (Form 1) can help identify ways in which the state or local self-governing body forest management organisation can support local economic development. Community forestry in forms that give communities rights to use products and services provided by forests (Forms 2 and 3) can stimulate the development of local businesses and improve the social and economic situation of the population. Experience from other States of transferring long term use rights to communities shows that substantial gains can be made if the transfer is well designed and is based on a solid understanding of the links between forests, forest enterprise and local livelihoods.

Combating forest degradation and improving forest condition

Simply raising the population's awareness about sustainable forest management and involving the population in forest management decisions can help change the population's behaviour and cause them to behave in a more responsible way. Transferring responsibility for managing a forest to a community organisation can provide additional incentives to the population to take care of the forest.

Changing attitudes and relationships for the better

Community forestry in all three forms can improve the attitudes of local communities and forest officials towards each other and forests. This is a result of the interactions that take place at awareness raising events, consultation meetings, trainings and advisory visits.

Enhancing social capital

Community forestry which involves transfers of rights and responsibilities to a community organisation (Forms 2 and 3) creates institutional capacity to manage forests and supports the creation of new businesses processing and selling forest products, which in turn provide a useful platform upon which other local economic development initiatives can be taken. The discussions between forestry department officials and community organisation, which are an essential part of implementing community forestry, and training programmes help to catalyse the development of leadership in communities which is one of the ways to support sustainable landscape preservation and forest conservation practices in buffer communities.

Resources to implement community forestry and sustainable landscape management

Community forestry and sustainable landscape management requires investment in various measures, depending on the form in which it is implemented. Investment may be needed in the preparation of legislation, the development of operational guidelines, training for forest management organisation staff and members of community organisations, the startup costs of a community organisation, awareness-raising events and the running costs of consultation mechanisms. If state budget financing is not guaranteed, donor funding will need to be found.

Importance of community involvement and ownership

It is important to know community members' interests in being involved in forest management and landscape management before forest management planning starts. The responsible authority may already have decided that community involvement will be, at least initially, limited to consultation about the objectives of forest management and about activities which the responsible authority proposes to carry out. Even in this case it is helpful to know community members' interest in being involved. If the responsible authority is considering allowing community members to use some of the products and services provided by the forest, it is important to know whether community members are interested and are ready to accept the responsibilities associated with using the forest.

The interest of community members in being involved in forest management can be assessed during the initial awareness-raising activity.

As a result of the project:

- Urgent preventative measures were undertaken to demonstrate best approaches/methods of immediate reforestation and landscape restoration in areas affected by land-slides, mudflows, avalanches and other natural disasters, and was finalised in all project States. Reforested areas covered include: 22.1 ha area in Koghb community and 8.4 ha in Djujevan communities in Armenia; 21 ha of pilot area of Shahriyar in Azerbaijan; 4.3 ha underwent afforestation and 62 ha supported natural regeneration in Racha, Georgia; 8 ha underwent reforestation and 3 ha natural regeneration in pilot communities in Adygeya (Dakhovskaya, Khamyshki, Uts-Sakhrai and Sakhrai), Russian Federation;
- Community Forest Management Plans for the pilot communities in Armenia, Azerbaijan, Georgia and Russia (CFMP for Oni Municipality, CFMP for Koghb community, CFMP for Djudjevan community, CFMP for Shahriyar community, CFMP for Dakhovskaya), regions of Shahriyar, Racha, Adygeya and Tavush were elaborated, discussed/approved by communities, local foresters, LSGs, Steering Committee members, as well as line ministries and government agencies, and published in project States.
- Regional Model Guideline has been developed, translated into Russian language and published as a bilingual document in one volume, published on REC C website, can be found at the link below:
http://rec-caucasus.org/files/publications/pub_1327481481.pdf
- Information leaflets, information bulletins and promotional booklets on the project objectives, project main activities and project expected results and achievements have been disseminated to the different target groups, during community meetings, donor co-ordination meetings, as well as relevant stakeholder workshops with partner organisations;
- An information pack on best practice of sustainable forest management was prepared and disseminated among project target groups, line Ministries of Nature Protection, Agriculture, Territorial Administration, Urban Development, during project Steering Committees, among NGOs, CBOs, community residents:
<http://www.reccaucasus.am/index.php?act=publications&pid=11&langs=en>);
- Information CD Packs on the best practice of sustainable forest management was prepared and disseminated among project target groups, line Ministries of Nature Protection, Agriculture, Territorial Administration, Urban Development, during project Steering Committees, among NGOs, CBOs, and community residents. Info is available in the link below:
<http://www.rec-caucasus.am/index.php?act=publications&pid=11&langs=en> ;
- FCFPP Armenia, Azerbaijan, Georgia and Russia Newsletters including related articles is developed in national languages and placed on the website of RECC HQs' and BO websites. Newsletter-articles cover wide range of topics related to Forest, Forest management, Use and Ecotourism, Forest and Human health, etc. Newsletter on Forest Articles is available on the link below:
<http://www.rec-caucasus.am/modules/publications/files/FCFPP%20Newsletter-Articles%20Issue%20May%202012%20.pdf>;
- “Pasture management” banks are elaborated, which include the fertility of pastures, location, and livestock, the soil and climatic conditions of the area;
- Regional and National Newsletters on FCFPP is prepared and disseminated through REC Caucasus electronic network: http://rec-caucasus.org/files/publications/pub_1339586826.pdf;

- Educational video film “Forest we live in. What is sustainable forest management?” is prepared and published on Internet-sites
<http://rusrec.ru/ru/news/1745> & www.youtube.com/watch?v=tK6OPOfDsc0 & DVD;
- Three Public service announcements/video clips on importance of sustainable forest management and community forest management were elaborated;
- The Cook-book was elaborated within the current project to outline project implementation and work done during the project lifetime: it brings examples of success stories, which precisely demonstrate the positive impact of the project and the positive changes that happened in community’s lives. The cookbook incorporates information on overall project components, highlights the process undertaken towards achievement of project objectives, and also puts emphasis on the results achieved under project components, including success stories;
- Capacity-building training on CFMP (including on-the-job field training in pilot forest and landscape restoration areas) on ideas and principles of community forest management plans that were conducted and completed in all project States between 2009 and 2012.

Training programmes covered the following information:

- Planning and implementation of reforestation activities through community involvement;
- Planning and implementing the process to support natural regeneration through community involvement;
- Non-timber forest production and secondary use by communities;
- Involvement in recreation and eco-tourism activities.



Reforestation in Tavush region, Armenia



Forest restoration on–job training

REC Caucasus has been one of the pioneers in the regional of South Caucasus in terms of support to conservation of agro-biodiversity, measuring and building on efforts of adaptation on Climate change impact. This particular initiative was funded by the EU and pilot projects were funded by GIZ Regional office in Tbilisi, Georgia.

The project has built on adaptive capacities in the South Caucasus States to ensure resilience of agro-biodiversity of especially vulnerable arid and semi-arid ecosystems and local livelihoods to climate change. Specific objectives focused 1) on promotion of agro-biodiversity conservation and adaptation to climate change through introduction of supportive policy framework at national and local level; 2. to improvement of institutional and individual capacity for sustaining agro-biodiversity in arid and semi-arid ecosystems and increasing livelihood level in face of climate change, and 3) to support in development and implementation of coping mechanisms to improve resilience of local communities to future climate change through introduction of sustainable agricultural practices in selected regions.

This project focuses on preserving the biological diversity of native cultivars and their wild relatives including useful plants that are of current or potential use to global agriculture and food security. The project has three main components. The first is to implement a combination of in-situ conservation activities that could optimise the scarce local financial resources. This project strengthened the role of protected areas in the conservation of wild relatives and useful plants.

The current system of protected areas harbours an estimated half of agrobiodiversity. This fact provides the project with a promising course of action. The protected areas already exist, and if changes to their administrative, regulatory and enforcement frameworks are brought in, they will constitute a cost-effective option for the protection of a significant proportion of the Armenian agrobiodiversity.

In parallel, the project promoted the conservation of the gene pool in situ by re-establishing in selected sites the local tradition of using landraces, both in farms and domestic gardens. Pilot projects were aimed at promotion and use of local varieties in those geographical and commercial niches in which they compete favourably with introduced varieties.

Pilot projects have also re-established traditional pasturing systems that promote the conservation of local fodder varieties and will re-order the harvest methods for useful plants - plants other than the ones cultivated on large-scale, and used as medicine, food and for coloring etc., are called Useful Plants e.g. wild fruits and berries, walnut, hazelnut etc.). Success of the project was highly dependent upon the active involvement of farmers in agrobiodiversity conservation and the subsequent dissemination of conservation techniques by the farmers themselves.

The project's second component is to promote changes in the legal and regulatory framework supporting the conservation of agrobiodiversity. Success of several outputs described in the first component is also dependent upon a supportive legal and regulatory framework. Among them is the strengthening of the system of protected areas and the regulation of the currently uncontrolled and intensive harvest of useful plants. The project was intended to implement changes in the legislative framework and the subsequent set of economic incentives in order to encourage private sector involvement in the commercial use of agrobiodiversity.

Finally, the third component is a systematic effort to build technical capacity and public awareness in the conservation of agrobiodiversity. Government units, NGOs, the general public and local communities are main beneficiaries. Capacity building activities include farmer-to-farmer programmes intended to promote the sharing of traditional agricultural knowledge and to reestablish the formal and informal channels by which such knowledge was circulated.

4. Sustainable land management for mitigating land degradation and reducing poverty in the South Caucasus region

The project contributed to improving of the environmental situation by improving environment management mechanisms, as well as strengthening regional co-operation between Armenia, Azerbaijan and Georgia to solve environmental problems. Since 2007, REC Caucasus has started to implement the project “Sustainable Land Management for Mitigating Land Degradation and Reducing Poverty in the South Caucasus Region” in the three South Caucasus States. The overall objective of the proposed Project is to ensure continued ecosystem functions and integrity, reduce poverty, enhance food security and income for rural farmers in the South Caucasus States by combating desertification, strengthening the natural resource base and revitalise the agricultural sector, and increase awareness about best practices for decision-making and to building local government capacity in development of environmental democracy and public participation.

Main objectives of the project covered the following thematic areas:

1. Strengthening policy, planning and regulatory environments for promotion of sustainable land management (SLM) in transboundary watersheds of the South Caucasus region;
2. Demonstrating benefits of watershed-based sustainable land management and alternative livelihoods for rural people while protecting fragile ecosystems and disseminating lessons learned and best practice through developing a replication strategy.

The project was initiated to contribute to the promotion of sustainable livelihood and alleviation of poverty via understanding of the policy and socio-economic factors affecting the land management, introducing of watershed-based integrated nature resources management practices, developing regulatory and institutional mechanisms, enhancing local capacities for combating desertification and developing the replication strategy to extend outcomes of the Project and upscale best practices of sustainable land management and alternative livelihood in other regions of the South Caucasus.

The advantages of targeting the Caucasus Eco-region for sustainable land management are many. For one, the fate of natural ecosystems and natural resource use can be addressed across political boundaries. An Eco-region approach allows setting more meaningful goals for sustainable nature management and ensuring socio-economic welfare for people in the entire region. Operating at a regional scale will help us achieve results that are ecologically sound, as well as socially and economically viable.

Based on expert initial assessment of the study areas and judgment, certain changes were made to the target areas that were originally presented in the project in order to ensure that the project addresses the two key priority objectives: initiatives to be watershed specific and transboundary. Specifically, based on the experts' judgment, it was agreed to substitute Telavi district (which is not transboundary area) by the Signaghi district (which is a transboundary area) in Georgia and to add the Samukh region in Azerbaijan, since it is located in the Iori-Alazani transboundary watershed. In Armenia, the project was implemented in the Lori region where the impact of land degradation was the most visible. With these changes, study areas increased. These amendments ensured that all target areas, in all three South Caucasus States, are transboundary and are within the target watersheds, which is important to plan joint bilateral watershed based SLM action plans.

In particular the following significant impacts at regional and as well national levels are evident:

- Bilateral watershed Action Plans (complying with EU guidelines and recommendations) for improved land planning, management and monitoring in trans-boundary river basins of the South Caucasus region are elaborated, agreed among stakeholders and effectively used by 16 municipalities (Toumanyan, Alaverdi, Akhtala, Belaken, Zagatala, Sheki, Gakh, Oguz, Mingachavir, Bolnisi, Marneuli, Dmanisi, Telavi, Lagodekhi, Dedoplistskaro and Sagarejo) in decision-making;
- 12 pilot projects are successfully implemented and local government and community groups in 12 villages of the Khrami-Debeda and Alazani-Iori transboundary river basins have awareness, practical knowledge and capacity to plan and manage lands, forests, pastures and arable areas in a sustainable way to protect fragile ecosystems and enhance food security and income;
- 3 National assessment reports on land management-related national legislations and institutional set-ups in South Caucasus States with comparative analysis with EU guidelines and recommendations for legal and institutional improvements for SLM are available and used by the relevant ministries in all three South Caucasus States in the process of EU approximation;
- Based on results and main findings of the project in Azerbaijan and Georgia the Alignment of National Action Programme and Reporting Process under UNCCD process have been initiated by REC C and capacity strengthening activities of decision makers successfully commenced in both States.

Key achievements of the project are:

- The cumulative number of beneficiaries recorded as having been involved and reached by project programmes (16,000 households);
- Although no new legislation and institutional set-up in the sphere of Sustainable land management is not in place yet, there has been a significant increase in interest of governments of South Caucasus States to introduce SLM-based approaches. The issue of sustainable land management have been included in the National Environmental Action Plans and priorities of all three States as an urgent need for immediate interventions;
- Significant numbers (17 organisations of more than 75 persons) of NGOs and CBOs stating that they were actively involved in project implementation and are considering continuing active lobbying of SLM approaches and methods for the long term;
- There has been a considerable increase in private sector interest (more than 24 companies active in the fields of agriculture and nature resources utilisation) in Sustainable land management and in provision of new technology based on SLM .This has been evidenced by the increased range of services available (e.g. several providers now offer deep irrigation systems, etc.), and the number of service providers attending the project meeting to make presentations on the services they offer;
- Sustainable land management technological methods and practices are in use by a substantial number of local farmers and communities in the pilot zones – transboundary river basins (almost 1,500 local farmers)
- Key elements of Sustainable land management are included in local development plans and more than 150 local authorities active in pilot transboundary watersheds have good understanding and handbooks to follow the SLM principles.

The project has proposed a portfolio of tools that will enable South Caucasus States – with appropriate support – to analyse their needs and develop their own vision and policies to facilitate the Sustainable Land Management at national level and present future steps.



One of the important results of the Land degradation project was the Regional study on “Analysis of Trends and Dynamics on Land Degradation” in the States of the South Caucasus. The Report reviews the issues of peculiarities, causes and mitigation of development of top-soil degradation process on transboundary territories of Armenia, Azerbaijan and Georgia, located in the river Iori-Alazani and Khrami-Debed basins. The analysis of existing information related to natural landscapes and agricultural grounds demonstrated that the top-soil on a significant part of these territories is one of the most

vulnerable ecosystems, which is the result of strong anthropogenic transformation of natural landscapes over a long period. Analysis of archeological monuments, studied of the above mentioned transboundary territories of Armenia, Azerbaijan and Georgia evidences that major part of these territories were developed by humans for crop and animal farming purposes since the 4th millennium B.C.

Since this time, the process of degradation of natural landscapes, i.e. top-soil of these territories (especially, the lower zone – up to 600-800 m above sea level) begins. It should be mentioned that this process was particularly strongly revealed on transboundary territories after the well-known political developments – disintegration of Soviet Union, which was followed by worsening of social-economic conditions of population. In the result of newly implemented reforms, major part of agricultural grounds was received by a private owner, who, due to insufficiency of financial means, couldn't cope with problems.

Due to the lack of agricultural equipment, certain part of croplands remained uncultivated, part turned into pastures and meadows, and on most part of the existing exploited croplands, agro technical timelines are not observed, crop rotation, strip cropping, sowing crop selection rules are infringed. Increase of forest cover felling exacerbated surface wash and linear erosion, and destruction of major parts of windbreaks and field-protecting strips resulted in the strengthening of weathering. The strength of irrigational erosion increased significantly on the above-mentioned transboundary territories over the last two decades, which, primarily, was conditioned by the failure of irrigation systems. The level of chemical pollution of top-soil should also be mentioned, primarily encountered on the territories adjacent to ore mining and processing enterprises (especially on separate sites of transboundary territory of Armenia and Georgia).

In general, the top-soil of the above-mentioned transboundary target territories obviously experiences degradation due to improper management and lack of care on quite large areas and gradually becomes unsuitable for crop and animal farming development. This process can become irreversible, if proper management of care and use of soil is not established and implemented.

It should be resolved as soon as possible. The more so that the intensity of the development of top-soil will be further degraded by the anticipated global climate change, and as a result, the top-soil of transboundary territories will succumb to an even graver level of degradation.



It should be mentioned that from the point of view of the study of land degradation issues on the target transboundary territories, development and practical implementation of the measures of its protection (agro technical, hydro technical, forest-land-reclamation, etc.), significant activities have been carried out by scientific research organisations and developers of the relevant specialisations of agriculture in

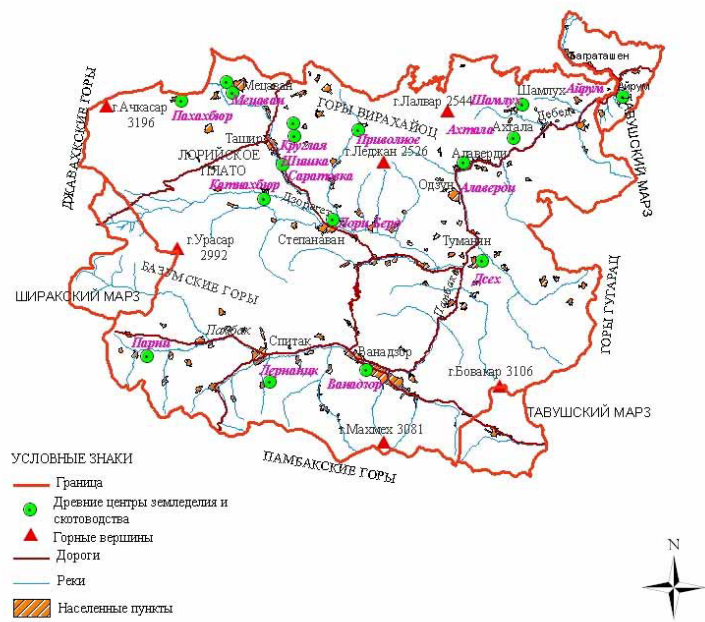
Armenia, Azerbaijan and Georgia since the 1950s.

Master plans for anti-erosion measures, soil-erosion zoning plans, programmes of recovery-renovation of degraded soils, etc. were developed taking into account the peculiarities of the degradation of the arable layers, the characteristics of which vary according to the territories. These contained recommendations on measures and methods of protection of agricultural grounds from erosion, as well as agricultural, forestland-reclamation, economic-organisational, etc. measures to be implemented.

Due to difficult political circumstances and grave economic conditions existing in Armenia, Azerbaijan and Georgian since the early 1990s, less and less attention was paid to the soil degradation problem. The relevant activities, accompanied with agro technical, hydro technical, economic-organisational and other required measures on certain part of agricultural grounds either were carried out in insufficient manner or were not carried out at all. As a result of the above, the degradation of agricultural grounds became exacerbated, and much of the topsoil became less fertile, and in some places unsuitable for crop and animal farming.

A report was compiled by specialist scientific research project organisations with the consideration of research conducted with regard to top-soil degradation processes and on the basis of analysis of materials, obtained by the authors (specialist in various spheres) of the Report during fieldworks.

During the evaluation of dynamics and trends of top-soil degradation of the target territories of the transboundary region, the authors employed a methodological approach, which provides for the use of the existing literary and library sources related to the physical-geographic environment (relief, geological structure, climate, hydrological conditions, top-soil, etc.) of these territories, factors and causes of top-soil degradation, as well as the results of analysis of the materials, newly obtained in the field.



Map 1. Territory of the watershed of the river Debed, Ancient settlements, centers of farming and cattle breeding⁴



Project site in Vayots Dzor, Armenia

⁴ Analysis of Dynamics and Trends of Land Degradation in the Regions of Target Transboundary Territory of the Rivers Khrami, Debed, Alazani and Iori Basins, REC Caucasus 2011.



Kakheti region, Georgia

Support development of biodiversity conservation policies and practices in mountain regions of the South Caucasus (TEEB)

Support development of biodiversity conservation policies and practices in mountain regions of the South Caucasus (TEEB) project was implemented by REC Caucasus in close co-operation with governments, civil society and scientific sectors to build capacity of local communities and authorities to address biodiversity loss in forest ecosystems of mountain regions of the South Caucasus, in order to improve participatory biodiversity management and sustainable use of forest ecosystems. The project was funded by the Norwegian Ministry of Foreign Affairs.

Outcomes of the project were focused on the following aspects:

- A. Creation of knowledge on the economic value of ecosystems services and biodiversity,
- B. Raising public awareness on the importance of biodiversity conservation and sustainable use, encouragement of the local population to use bio-resources in a sustainable manner;
- C. Enhancement of local capacity to recognise value of biodiversity and ecosystem services to ensure sustainable use of biodiversity which facilitates proper planning of biodiversity conservation and sustainable use at local level;
- D. Support to sustainable management of biological resources which facilitates maintenance of biodiversity in target communities;
- E. Improved skills of the local government and community qualification in participatory biodiversity management planning: beneficiaries are able to independently administer the process.
- F. Establishing a proper basis for decision makers to identify and plan conservation measures and sustainable use of biological resources;
- G. Improved capacities and skills of target communities through planning and practical implementation of conservation measures.

The South Caucasus Eco-region covers a total area of 186,343 km², extending over all Armenia, Azerbaijan and Georgia. The biodiversity of the South Caucasus is of global importance.

The tremendous diversity of species in the region and many of its ecosystems are increasingly threatened. There is considerable pressure from the exploitation of natural resources. Biodiversity loss is driven by local, regional and global factors, so responses are also needed on all levels. Responses need to acknowledge multiple stakeholders with different needs. Further progress in reducing biodiversity loss will come through greater coherence and synergies among sectorial responses and through more systematic consideration of trade-offs among ecosystem services or between biodiversity conservation and other needs of society. One of the most important issues faced by the region is recognition of value of biodiversity at the national and most importantly, regional level. The current project has served the goals targeting improved understanding on value of inclusive and constructive regional policy development, consultation and co-operation between governments and stakeholders, including NGOs, donors, academia and businesses, to ensure strong synergies between NBSAP revision processes and facilitate regional biodiversity conservation policy development process in South Caucasus.

Another goal of the project was focused on capacity development initiatives at local, national and regional levels to design innovative multi-stakeholder and cross-sectorial involvement to support implementation of the National / Regional Biodiversity Strategic Action Plan for 2016-2020. The overall objective of the project is mainstreaming biodiversity values into decision-making and encourage regional approach at various levels of biodiversity governance in South Caucasus States.

Specific objectives of the project are to:

- promote the regional and trans-boundary co-operation in the area of Biodiversity Conservation through establishment of the regional platform with involvement of all key stakeholders especially decision makers, NGOs and donors;
- create a forum for the interested parties in the South Caucasus region to discuss content, thematic priorities, approaches and lessons learned in the process of preparation/revision, implementation and monitoring of NBSAPs in the South Caucasus States;
- provide an opportunity to the main stakeholders involved in the development of NBSAPs to jointly identify the common needs and approaches for elaboration of Regional BSAP, identify and plan the steps required for development of the regional BSAP.
- improve institutional and individual capacity of decision makers in South Caucasus States on biodiversity values, increase the potential of active engagement in implementation of the national and regional BSAPs;
- support development and implementation of coping mechanisms for the recognition and mainstreaming of biodiversity values in the national development process.

The results:

- Knowledge on economic values of ecosystems services and biodiversity was created;
- Public awareness was raised on importance of biodiversity conservation, which encouraged the local population to use bio-resources in sustainable manner;
- Local capacity to recognise values of biodiversity and ecosystem services were enhanced to ensure sustainable use of biodiversity;
- Biological resources were managed in sustainable manner, which facilitates maintenance of biodiversity in target communities;
- The local government and community qualification in participatory biodiversity management planning was raised so that beneficiaries are able to administer the process independently.

Documentation:

- Reports on economic values of ecosystems services and biodiversity in selected areas of Armenia, Azerbaijan and Georgia were produced;
- Case Studies on Forest Resource Use in selected pilot communities in Armenia, Azerbaijan, Georgia are published;
- Recommendations on sustainable use of forests and community forest management, as well as Payment for forest ecosystem services were elaborated and included in the reports;
- GIS maps and databases of forest ecosystems in surrounding areas of selected target communities were developed and used;
- Studies on economic valuation of ecosystem services policy frameworks, including recommendations to mainstream biodiversity issues into policy/regulatory documents were elaborated at national levels and summarised in Regional recommendations package on TEEB;
- Knowledge and capacities of community members, decision-makers and professionals working on ecosystem services and nature conservation, as well as state environmental inspection, were strengthened to recognise values of biodiversity, participatory planning of biodiversity conservation, sustainable use and community forest policy and practice;
- Local plans for biodiversity conservation and sustainable use were devised and approved by steering committees in three States.

Most importantly, the project complemented the prevention of forest degradation and the restoration of



landscapes and pastures in partner communities, in close co-operation with community organisations specialising in landscape restoration and forest conservation. In terms of the scale of restored territories, below are the final figures for Armenia, Georgia and Azerbaijan.

2,000 walnuts seedlings, 6,500 walnut and nut-trees seedlings, 8050 and 5,000 walnut, ash-tree, oak and maple trees were planted in pilot communities.

26.5 ha landscape are reforested in three States and 200 ha of the landscape was naturally regenerated by REC Caucasus. Project expert teams have produced a GIS database of forest ecosystems in surrounding areas of selected target communities which has been developed and is currently used by respective agencies for their daily work and operations. Subsequent reports on GIS mapping of forest ecosystems in surrounding areas of selected target communities,

ecosystem maps, studies on policy frameworks (including recommendations to mainstream biodiversity issues into policy/regulatory documents) were produced.

Meanwhile, REC Caucasus has been working on the improvement of capacities of local communities in pilot areas that were strengthened through capacity-building training targeting representatives of local communities.

Training covered:

- recognition of values of biodiversity,
- participatory planning of biodiversity conservation,
- sustainable use of forests,
- community forest policy,
- Forest Management and Planning
- On-job skill building trainings on reforestation/afforestation, landscape restoration

Project teams have elaborated local plans for biodiversity conservation and sustainable use for communities and local forestry agencies, in line with reforestation and landscape restoration works in the pilot areas within three States of South Caucasus.

The role of SPNAs in the provisional issues of ecosystem services

In order to ensure the actual living conditions of mankind during the modern conditions of natural ecosystem violations it is actual to unconditionally conserve still existing natural landscapes and ecosystems and ecosystem services (hereinafter ES) provided by them. That is why ES provision issue is highlighted by “2010-2020 Aichi Target 11” since the uniqueness of each flora and fauna species is conditioned not only by gene pool but also by their role in the ecosystem.

At present SPNAs are considered as ES stability, conservation and restoration areas- regional centers the activities of which are aimed at not only to conservation of natural wealth but also to the improvement of well-being of the local population, poverty reduction and sustainable development. This allows developing a comprehensive ecosystem model of environmental perception, in case of which all SPNA functions are aimed at solving practical problems and are consistent with the State's socio-economic conditions and needs.



In the SPNA system the revealed benefits received from ES may significantly contribute to conflict mitigation driven by environmental restrictions creating legal basis for the population to use natural resources. Moreover, the benefits received from ES should be distributed fairly to contribute to the improvement of social conditions of the communities.

On the other hand the creation of benefit distribution and compensation mechanisms, as well as the decision of communities and individuals which bear expenses and receive benefits is rather a difficult issue, which can only be solved through detailed study of ES. It should be noted that ecosystems can adapt to changes and undergo self-recovery but in the case of maximum violation their nature can be altered and some capacities of ES ceased. Thus, SPNAs, being a flexible environmental tool, should ensure stability of ES, solving a number of economic, social, cultural and spiritual issues.

Services provided by ecosystems mainly have provisional (food, spring water, fresh air, fuel, raw materials); regulating (climate, prevention of natural disasters and epidemics, shelters, habitat, erosion prevention); cultural (aesthetic, religious, scientific, social and spiritual values, traditions, recreation resources) and supportive (soil arising, photosynthesis, nitrogen, carbon, oxygen, water circulation) meaning. ES are of economic value and should be integrated into the overall economic system.

Reimbursement fees for their provision or conservation are new approaches in the environmental sphere that encourage the creation of additional financial flows aimed at landscape and biodiversity.

At the creation of payment mechanisms for ES reimbursement the types of ES should be clearly specified, as well as the amount of resources directed to providers by consumers, legislative and institutional bases taking into account local peculiarities and the socioeconomic situation. Thus economic long-term analysis of ecosystem services should be addressed to the environmental- rational, socially-equitable and economically-profitable solution to problems.

Theoretically, state expenses of the environmental sphere, resources of pollution organisations, donor organisations, payments for natural use, land owners and beneficiaries are considered the main financial sources for ES conservation in SPNAs. Payments for ecosystem services can later be reproduced in the form of environmental funds contributing to the provision of funds for the conservation of nature, creation of indemnity funds and creation of bases for green economy.

The complex meaning of ES in SPNAs, and in particular the provision of living conditions by them, does not yet have a specific economic assessment to identify ecosystem violation and biodiversity impoverishment.

At present ES economic assessment methods are mostly used in mining, forestry, water resources, as well as in the ecotourism sphere. Ecotourism is characterised by a relatively weak negative impact on the natural environment, being an efficient means for ecological knowledge and information dissemination, tension easing between environmental and social-economic systems and integration promotion. It ensures influx of additional funds for SPNA management and growth in financial stability. Ecotourism is also an active way for local people to get stable incomes, and is one of the effective methods for improving living standards and increasing participation in employment and management of SPNAs.

Recommendations on legislative amendments for the application of new financial mechanisms for nature protection. As a result of studies and reports conducted within the project, the following recommendations on legislative amendments for application of new financial mechanisms on nature protection were elaborated:

- Ecosystem service-related issues are not sufficiently regulated, including types of ES such as regulation of air quality, climate regulation, purification of air and water, modification of biogen, ensuring soil fertility and formation, regulation of erosion, protection from harmful ultraviolet radiation, reduction of temperature extremes, waves and wind speed, protection from droughts etc. are completely lacking or are not sufficiently regulated;
- Typology of methods of natural resource use, their use and functions do not have a precise classification and partly correspond to internationally adopted classification of ecosystem service methodology or methods: ecosystem services are not immediately or directly related to the main objectives of current legislative frameworks;
- The necessity of economic valuation of natural resources, their assessment, their functions, products and services potentially provided as result of use of ecosystems, natural resources or natural capital, are not sufficiently or visibly defined in current legislation;

- Methodology or methodological grounds of ES economic or value assessment, general economic valuation of natural resources or natural capital are not clearly or sufficiently defined by legislation or other legal acts.

There will be a need to devise a new chapter in the laws concerning the ecosystem services specifically related to the natural resource use: there will be a description of ecosystem services, mechanisms of implementation and regulation of ecosystem services. There will be a need to calculate profits and possible payments for ecosystem services as per each type of used natural resource, depending on the quality and amount of resource used.



Reforestation works in communities

Green growth initiatives

“Green economy” is the economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In particular, “green economy” is a model based on sustainable development and knowledge of environmental economics. The OECD has developed and introduced the concept of “green growth”, defined as maximising economic growth and development while avoiding unsustainable pressure on the quantity and quality of natural assets and harnessing the growth potential that arises from transiting towards a green economy.

The concept of "green economy" or "green growth" also includes the notions of resource efficiency and cleaner production, serving as a basis for sustainable development of industrial sector. Resource efficiency and cleaner production concepts create a link between economic development/benefit generation, business sectors and the environment, where production, distribution and consumption of goods and services increase human welfare in the long run, without exposing future generations to significant environmental risks or environmental deficit.

Competitiveness and Efficiency for SME through Cleaner Production

Cleaner production means the continuous application of an integrated, preventative environmental strategy to processes and products in order to reduce risks to humans and the environment”. The definition is quite complex and difficult to understand, but we have set a target to our Plain Language Guide to simplify the CP implementation process and to describe realistic CP implementation. There are a number of guidelines and reference materials describing the processes for the CP implementation, but often they are too scientific and complicated because they are designed for the enterprises with complex production technology, which needs detailed complex assessment of existing processes, waste generation, production parameters etc. The present document describes a very basic approach to the CP implementation and is based on experience gained

during the CP activities implemented in the region and on cases common for the small and medium size enterprises in the Caucasus region. In real situations, we often face technical personnel working in enterprises who do not know the processes in detail and usually they have not analysed their own technology from a perspective of minimisation of production costs or environmental indicators in order to improve their production and benefit from improvements made.

While working on implementation of the CP in practice in Caucasus region, we have learned that in small and medium size enterprises the CP can be implemented, and the technology can significantly improve the operation of enterprises, even in the situation when enforcement of environmental requirements to the enterprises is very poor and costs related to environmental issues are so small that sometimes it is very difficult to quantify the benefits achieved from the improvements made.

Cleaner production is a cost-effective, preventative approach to pollution control that makes efficient use of energy and materials and reduces risks to health and safety. It is a “win-win” approach when an entrepreneur-run business gets benefit from the reduction of operation costs, minimisation of expenses related to environmental payments and penalties for pollution etc. On other hand, the community and Etat benefit from minimised environmental pollution, better consumable products and improved living conditions.

The many potential benefits to an industrial enterprise adopting the CP include cost savings; higher product yields and quality; maintenance or improvement of market share and reduced liabilities.

Worldwide experience shows that achieving these benefits through the CP requires real and sustained commitment of senior enterprise managers to the CP. Otherwise the implementation of the CP technology has a non-continuous character, and after the pilot project implementation the CP stops. In practice, the CP can be defined as preventative, continuous process addressed to the implementation of methodology to improve process efficiency and increase overall yield of final products. The CP should be oriented to reduction of environmental impact caused by production process. This can be reached by reduction of the pollutant and waste generation at several stages of the production process and the increased overall environmental performance of the enterprise. In addition to the methodology, the results of the CP measures implemented depend on specific projects selected for the CP implementation.

The project can be low, medium or high cost. Internationally the following is recognised as A type, B type and C type CP projects. A – Low Cost (self-resourced); B – Moderate Cost, internally financed by specific funds including revolving funds, specific grants addressed to specific issues etc. C – High Cost needing financial investment. For implementation of the CP actions, different scales of financial assessment is required. A simple pay-back method of assessment is suitable for - A/B actions; a return on investment (ROI) assessment for - B/C actions. The CP is a “win-win” type of methodology, in which the benefits can be split between the entrepreneur and the public. This makes the CP very attractive, and the entrepreneurs’ benefits should be the driving force for implementation of the technology in production processes, as this also helps in dissemination via duplication of good practice by similar enterprises.

The benefits from the entrepreneur’s side are related mostly to financial benefits and reduction of enterprise risks related to environmental issues. The financial benefits can be reached by: by minimisation of production- related costs efficient use of raw materials can be achieved through improved raw material handling and storage. Improved process management can lead to a significant decrease in the quantities of wasted raw material and can generate savings from the disposal of wasted raw materials; increased yield of final product quantities and generation of extra income; minimisation of labour costs related to raw material handling; increased efficiency of specific processes leading to savings of operation costs at different operational stages such as temporary storage of semi products due to non-synchronised production; minimisation of buffer storage volumes and avoidance of multiple heating/cooling processes etc. Better technology enables producers to avoid the semi product waste generation and spoiling. Unexpected stopping

of technological lines often happens when technological equipment maintenance is not systematic and well managed, i.e. technological lines and equipment is repaired *after* it is damaged and not maintained correctly. Introduction of energy efficient technologies can be achieved via minimisation of electric energy losses because of bad synchronisation of equipment, replacement of equipment with modern more energy efficient models, introduction of computerised power management systems and better designed internal lighting systems with energy efficient lights, etc.

Another way is to avoid thermal energy loss through installation of insulated systems, better boilers and heaters, recovery of extra energy from waste streams and minimisation of materials reheating due to inefficient operation etc.

Minimisation of waste water quantities, pollution level and treatment requirements can effect a reduction of raw water costs and costs related to wastewater treatment, including both types of expenditure: investment and operation costs. This can be achieved by separation of different types of wastewater streams, minimisation of pollution at source, water recycling and the introduction of recirculation streams. Minimisation of solid waste generation can benefit in reduction of the costs for handling and disposal of the hazardous and nonhazardous wastes. The introduction of new recycling schemes can lead to financial benefits, which can help improve the financial sustainability of a business. It is important to prevent waste generation at source and to implement waste generation prevention techniques.

REC Caucasus co-operation initiatives “Promoting Competitiveness and Efficiency of Small and Medium Enterprises through Cleaner Production in South Caucasus” was implemented in the Republic of Armenia, Azerbaijan, Georgia and was aimed at Small and Medium Enterprises, private and non-governmental organisations, local self-governing bodies, experts interested and working in cleaner production for SMEs and industrial processes.

The overall objective of this project was to contribute to sustainable development and minimise environmental impact from the industrial sector by stimulating small and medium size enterprises (SMEs). The objective will be reached via the increase of SME’s capability in the preparation of financial documentation for CP and EE projects. The increased possibility for getting the financial resources from local and international financial institutions will improve the SME’s operating capabilities to become more economically efficient, while becoming more environmentally friendly and reducing their demand on locally scarce resources.

The specific objectives of the project:

- Identification of target groups of SME’s in Armenia, Georgia and Azerbaijan interested in increasing their development capabilities via additional funding from international and local financial institutions targeting cleaner production and energy efficiency implementation. The target groups will include organisations (private and public companies, local government bodies, small enterprises etc.); The target group can include local experts and consultants;
- Preparation of training materials for the above training courses, including materials for the main course, examples for home work etc. These materials should be printed and ready for dissemination;
- Increasing of skills and ability of small and medium size enterprises for identification of the CP and energy efficiency measures, and preparation of financial documentation packages for financing institutions;
- Raising awareness of the scarcity of resources and the possibilities of contributing to their conservation: this includes awareness-raising on relevant CP issues – e.g. costs to business if they do nothing, benefits of CP, help available to businesses etc.

- Increasing competitiveness and efficiency of SMEs in the South Caucasus
- Saving resources by introducing CP measures

Experience is shared in the mentioned field with the enterprise trained in CP and EE techniques in other South Caucasus States. A similar initiative was conducted by REC C within the next initiatives on cleaner production (CP) within “Strengthen Cleaner Production Policy and Practice in the South Caucasus States through applying an integrated and preventative environmental strategy” funded by Ministry of Infrastructure and Environment of the Netherlands.

Regional Resource-Efficient and Cleaner Production demonstration programme for the European Union's Eastern Neighbourhood (EaP) region

The RECP project is the component of the Regional Action of the European Union to support the greening of economies in the EaP States (Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine).

The overall objective of the RECP Demonstrations under the EaP GREEN Programme is to improve the resource productivity and environmental performance of businesses and other organisations in the target industry sectors of the Eastern Partnership Economies, including Armenia, and thereby contribute to sustainable industrial development and generation of employment and incomes. This will be achieved through the widespread implementation of RECP concepts, methods, techniques and policies by businesses and other organisations, governments at all levels, and providers of business services, including advisory and financial services.

Resource Efficient and Cleaner Production (RECP) applies proven preventive environmental approaches and productivity concepts for the triple benefits of improved resource productivity (hence reduced operational costs and reduced use of materials, energy and water), reduced environmental impacts (less waste, emissions and pollution) and improved occupational and community health and safety.

The programme is aimed at improving resource efficiency and environmental performance in each of the six EaP States (Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine), in particular in the prioritised agro-food, chemicals and construction materials’ sectors, through the widespread adaptation and adoption of RECP methods, practices and techniques.

Agro-food processing, chemical and construction materials’ sectors are specifically targeted given the current and expected future contributions of these sectors to the economies at large, their potential for job creation and development of small and medium enterprises, and their significant resource-use and pollution footprints.

Main activities:

The RECP programme is structured in three work-streams:

- RECP human and Institutional Capacity Development: Competent network of experts who deliver value-adding RECP services to enterprises and other organisations, in particular in the priority industry sectors;
- RECP Implementation, Dissemination and Replication: Implementation of RECP concepts, methods and techniques by businesses with verified environment, resource use and economic benefits; and
- RECP Technology Support: to improve access to appropriate and affordable RECP practices and techniques.

It is expected that businesses, business membership organisations, government and potentially other stakeholders (e.g. professional associations, academia) will have improved their awareness and understanding of RECP, its benefits and contribution to sustainable development.

One of the main strategic documents resulting from the RECP project has been the elaboration and stakeholder discussions of the RECP Primer⁵ which has served as a guiding document for localisation and the embedding of RECP methodology at a local level. RECP substantially contributes to a successful business establishment. The development and implementation of the RECP project is necessary to achieve the main strategic goal of any company operating in a competitive market economy – “better, cheaper and quicker”.



RECP covers almost all business processes: timely management, main and subsidiary production processes, raw material and technology stock management and forward planning.

RECP solves the problems of increasing the efficiency of raw material, water and energy exploitation, minimisation of waste production and pollution.

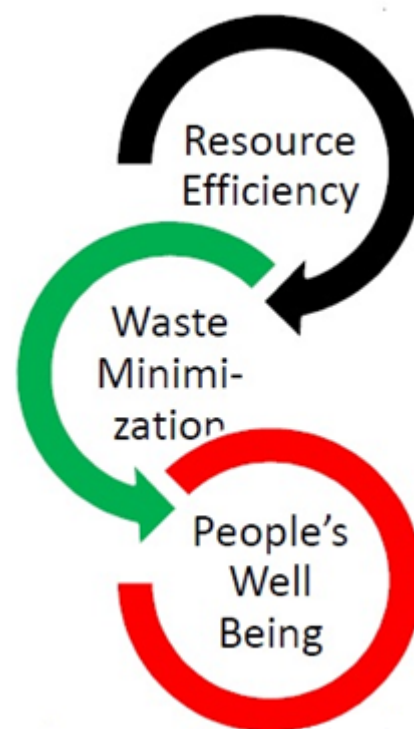
The results of RECP implementation are economic, environmental and social benefits and improvement of the environmental situation.

Introducing RECP enables:

- a reduction in production costs and technological needs;
- an increase in labour productivity;
- a possible improvement in product quality;
- a reduction of costs associated with waste production and pollution;
- a possible improvement of production conditions;
- an improvement of the company’s status in different kinds of negotiations
- an improvement of the public opinion of the company, etc.

RECP gives fourfold advantages – “Win-Win-Win-Win”: that is to say, implementing RECP benefits customers, business, government and nature.

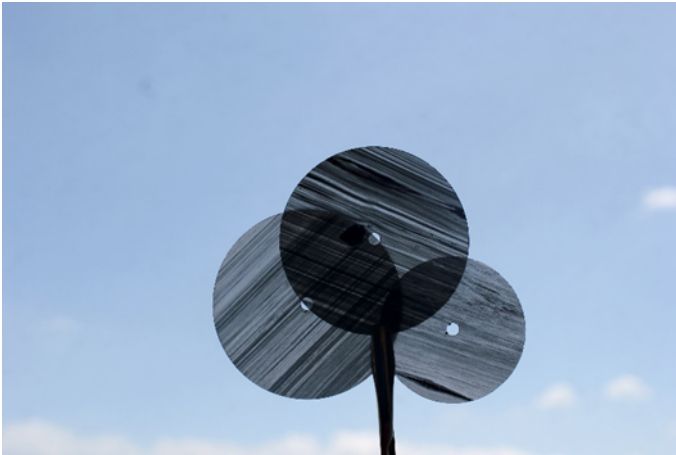
RECP is a policy of no regrets.



The Notion of resource efficiency and clean production (RECP)

What kind of resources does RECP deal with? What environmental benefits can be expected with introduction of RECP? What productivity and clean production is intended? What is an “environmentally friendly product”? The RECP definition is: Integrated and consistent application of preventative environmental behaviour and comprehensive methods, with the aim of increasing the productivity of the goods and service production process and mitigating risks for the environment and people.

⁵ <http://recp.ge/wp-content/uploads/2014/07/RECP-Primer.pdf>



RECP aims at

- Optimisation of natural resources (materials, water, energy) efficient exploitation;
- Minimisation of the negative impact of production systems on nature and environment by means of decreased waste production and pollution;
- Mitigation of negative impact risks for people and societies and ensuring development opportunities.

Resources

Natural resources are components of the environment that are used or can be used as objects of labour, tools or goods for consumption. Natural resources can be exhaustible or inexhaustible, renewable or non-renewable. For example, sunlight energy is an inexhaustible resource: plants are renewable resources and minerals are nonrenewable resources. Resources are classified by their origin (water, land, biological, climate and mineral resources), as well as by their interchangeability etc. For example, timber, metal, natural fibre, leather, fur etc. are replaceable resources, but oxygen and fresh water are irreplaceable.

Resources can be man-made or given by nature. Resources can be economic, labour, financial, etc. Economic resources are material and non-material resources used to produce goods and services. Many resources on Earth are on the edge of depletion. RECP project mainly discusses the efficient exploitation of the following resources: Materials, Energy and Water.

Efficiency

According to the proverb 'If the axe is blunt, it needs a double force, but the success is in skillful hands'. The main driving force of efficiency is rational management – by means of expansion and efficient exploitation of the existing resources. Though this idea may seem obvious, finding a systemic method for its implementation may yet prove a real challenge. Proportional criteria and indicators are usually used to define efficiency. For example, energy efficiency is defined as a legal, administrative, scientific, production, technical and economic targeted activity, aimed at reducing energy resource consumption.

The increase in absolute value of production does not necessarily imply increased productivity or increased efficiency. With the desire to avoid reference to complex economic concepts in our handbook, but nevertheless to make judgments about business administration, analysis and development, we need to use some concepts like productivity, efficiency, income, costs, expenditures, cost prices for goods, profit, etc.

Performing analysis is connected with classification of income and costs that can be done using various features. By including the cost price of a product, all costs can be divided into direct and indirect costs. Direct expenditure on materials, water and energy comprise the cost price of the product.

Several indicators are used to evaluate inventory stock efficiency – material unit average profitability, average consumption of material, average return on a unit of material.

Clean production

Why do we need to spend time, effort and money on improving the environment? People have rejected this aspect for ages. People have been neglecting it forever. Those days are now behind us: paying attention to environmental problems nowadays is a commercial issue.

In many leading markets environmental security is of crucial importance and the application of appropriate standards not only enables compliance with constantly tightening legal requirements, but also to meet the increasing consumer demand and develop a profitable enterprise. Already, environmental issues have started gradually influencing decisions to buy particular products in Armenian consumer market.

Recent social surveys have indicated that the majority of consumers in developed markets are willing to change their supplier and the brand they are using for the sake of a cleaner and better world around us. This fact alone is sufficient to prove the financial benefit of using “green technologies”.

Environmentally sustainable innovation is a stimulus for profitable business development. Eco-sustainable business means creating exceptional value for customers, shareholders and employees, simultaneously ensuring care and respect for natural ecosystems, humans and societies.

In recent years environmentally friendly or organic food consumption is becoming widespread. A product (service) is considered “environmentally friendly” if during the whole life-cycle (production, consumption, exploitation) it creates less negative impact on the environment compared to other products (services) of similar category.

5. Economic benefits of resource efficiency and clean production (RECP)

A company performing economic activity has expenditures and creates income. These important characteristics of performance reflect all aspects of the company’s economic activity. Income in the reporting period is the increase in economic benefit (value), that may arise from asset inflows or increases or decreases in liabilities, and lead to an increase in shareholder capital. Expenditure in the reporting period are decreases in economic benefits (value) that may arise from outflows or a decrease in assets or the creation or increase in liabilities that can lead to a decrease in shareholder capital.

Income and expenditure have a crucial impact on financial results of a business, created by matching or combining them. For this reason the analysis of income and expenditure has a high importance for every business. The income from operational activities (operational income) comprises the biggest share in a company’s total income. It consists of sales revenues and other operational income. Operational costs mainly comprise the cost price of goods and services sold, distribution, administrative and other costs.

Practices in RECP in Armenia

As a result of the project, RECP assessments studies were implemented based on the RECP methodology, tools and policy application in selected demonstration organisations working in agricultural/food and beverage production, construction and chemicals.

Gaps identified within production cycles	Suggestive RECP interventions
• Lack of a system for wastewater reuse /wastewater treatment • Accumulation of waste, lack of production line for use of waste materials/nonuse of waste residue • High amount of outdated equipment • Loss of water and raw materials because of the lack of a closed system of wastewater reuse and production on the use of waste materials, • Loss of organic waste production • Economic losses of company during the production phase, waste of final product (resource) • Loss of electricity, heat • Inaccurate measurements	• Circulation of wastewater • Reuse of wastewater • Processing of residues of raw materials (leather) • Sale of residues of raw materials (leather, salt) • Introduction of solar panels, water heaters on the roof space • Creation of proceedings aimed at reuse of wastewater • Building of reservoirs • Co-operation with neighbouring businesses, sharing water treatment plant • Adjusting the temperature in the drum depending on the quantity and quality of raw materials • Use of more accurate measuring instruments • Re-use of salt for industrial purposes • Water used for technological process and through the cleaning station can be used again for production purposes

RECP Business Cases

RECP opportunities were identified and evaluated in around 50 demonstration companies from targeted food, chemical and construction material sectors. RECP project has produced 24 Demonstration company RECP commercial cases in close co-operation with SMEs, to improve productivity and optimise RECP approaches and solutions within selected private companies. 24 RECP Business examples and assessment results were presented by national experts and SME management. RECP recommendations developed by the project are being used by private owners. Measures include energy efficiency, reduction and reuse of waste, shortened emissions and interesting innovative approaches for development of new products based on by-products (egg powder, liquid soap, opportunities for flour forage fodder production).

Resource Efficiency and Cleaner Production (RECP) applies proven preventative environmental approaches and productivity concepts for the triple benefits of improved resource productivity (reduced operational costs and reduced use of materials, energy and water), reduced environmental impact (less waste, emissions and pollution) and improved occupational and community health and safety. The initiative is aimed at improving resource efficiency and environmental performance in particular in the prioritised agro-food, chemical and

construction material sectors, through the widespread adaptation and adoption of RECP methods, practices and techniques. Currently, around 30 local SMEs have received individually designed audit packages with RECP recommendations as a result of RECP rapid assessment audits in the communities of Kotayq (Hrazdan), Lori (Vayots Dzor), Ararat and Dilijan cities (2014-2016).

Publications on RECP commercial examples are available at www.recp.am, the official website of RECP demonstration component in Armenia.

