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**CENTRAL BALTIC
INTERREG IV A
PROGRAMME
2007–2013**

GOVERNANCE AND COMMUNICATION FOR SUSTAINABLE COASTAL DEVELOPMENT

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Rīga 2011

Governance and Communication for Sustainable Coastal Development

Effective environmental communication, including awareness raising, education and outreach, is essential for promoting sustainable development. The sustainable future lies with our ability to educate children and adults to take responsibility for the common environment. The educational programs designed for environmental communication are a critical component in supporting the learning processes needed for sustainable living as known today and for finding the ways needed for tomorrow's actions. The project Cobweb is creating from this need. It focuses in creating models for cross-border cooperation where the key actors, such as universities, museums and nature and environmental schools, are together building environmental educational programs. Programs which are based on the latest knowledge of environmental and sustainability issues and effective environmental communication but also touching to people's feelings and senses. Cobweb combines the scientific approach with concrete awareness raising activity and methodology approach to a joint educational material building process with concrete outputs.

The COBWEB is co-financed by the European Union Central Baltic INTERREG IV A Programme 2007-2013".
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1. Project Introduction

The two training modules (TM) as the main project product and also complementary resource materials (RM) that have been developed by our team at the University of Latvia on the topics of Integrated coastal management and communication (TM-1) and on Coastal communication for sustainable development (TM-2) are designed and intended to serve for both:

- as the so-called **train-the-trainers training program and resource material** as well as
- **hands-on optional resources** for them for their everyday further local coastal training utilisation,

with the aim of providing an opportunity of sharing both theoretical backgrounds and approaches and, of course, practical experiences on **coastal management and communication innovation** among different types of **local coastal educators** (nature schools, universities, NGOs, museums etc.) in order to serve and encourage for local development **participatory actions** all the main coastal stakeholders and general public.

All these educators will have the possibility to select those parts and/or sub-parts etc of the whole material of the both prepared training modules which best suit their interests and needs and to include them into their own educational-training programmes and thereby broadening – we hope - the thematic and methodological scope of their educational work.

Thereby, these modules serve to achieve the project's key objective – **to create models of co-operation** in the field of environmental education and communication between

- universities,
- environmental and nature schools and
- museums, and
- other local stakeholders to be involved,

in order to strengthen the connection between the **sources of environmental knowledge and users** at the coastal areas-municipalities in the Central Baltic's sea region.

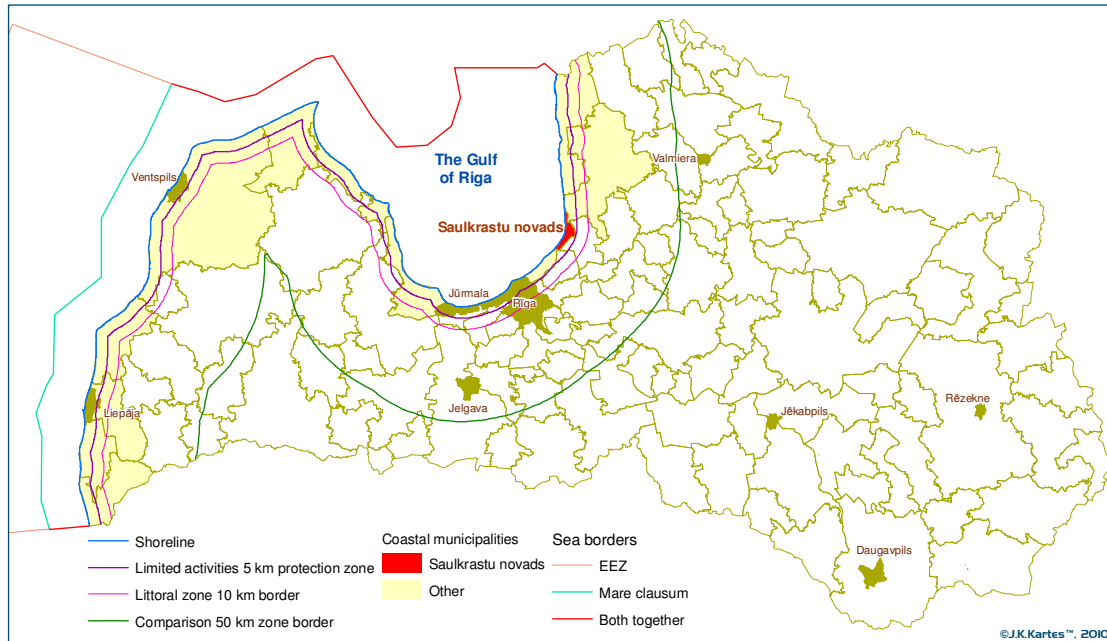
Project realization on costal communication as per related work package (WP-3) in Latvia is lead by the Department of Environmental Management (DoEM) at the University of Latvia, Faculty of Economics and Management, having extensive experience background, e.g. DoEM Environmental communication research and practice in Latvia:

- A series of **case study research** initiatives over the last decade carried out by full-scale case study research methodology at the local urban and rural municipalities of Cesis, Carnikava, Liepaja, Roja, Ventspils, Dundaga etc
- Done in **collaboration research and development projects** with local municipalities and with necessary involvement of all local stakeholders as well as with related institutions and experts outside
- More detailed studies - four main **collaboration communication** success stories in Latvian municipalities – Liepaja, Ventspils, Livani and Cesis

DoEM work for COBWEB joint project could be represented by the following main activities to be done and products to be developed:

- Coastal empirical seminars for background, desing and testing work planned:
 - Stakeholder seminars (SS) for coastal municipal case studies :
 - Saulkrasti municipality Integrated coastal management (ICZM)
 - Saulkrasti municipality Coastal communication development
 - Fact-finding seminars (FS) - coastal communication (CC) and indicators (CI) resources:
 - Liepaja municipality
 - Kolka municipality
 - Salacgriva municipality
 - Saulkrasti municipality
 - Riga integration seminar
 - National coastal communication seminars
 - Test-run seminars – national and international regular ongoing according to CS, RM and TM design and development.

Map 1 - Coastal municipalities: communication fact-finding seminars and case studies



- Coastal Communication Resource Pack (CCRP):
 - Case studies (CS):
 - CS-1 on Integrated coastal management and
 - CS-2 on Coastal communication management
 - Resource materials (RM) 1 – 5 to be designed from coastal seminars conducted and other studies done
- Coastal Training Modules (TM):
 - TM1 – Integrated coastal management and communication
 - TM2 – Coastal communication for sustainable development

All products prepared are to be tested nationally and internationally before realized on web and disseminated finally. All products are to be produced in Latvian and with necessary selective translations in English too.

2. Train-the-trainers Resource: Background and Approaches

Main final product to be designed, elaborated, tested and prepared to public use are two complementary training modules (TM) and there are taken into account following concepts and Latvia practice applications.

Training module 1 on Integrated coastal management and communication focuses on coastal management implementation at the local level and comprises activities by all key interest groups and scope of their interests, emphasizing in particular on two key target groups: **municipality management on one side**, selecting development planning and ICZM approach, and **resident (household) action development** on the other side - acting both in their internal environment and also affecting and participating in maintaining the external environment.

In studying this interaction of the top-down and bottom-up approaches, five concepts are realised in **TM-1 module**:

1. environmental management concept and approaches;
2. municipal action development and ICZM;
3. residents and **household** environmental management;
4. **indicators** – how to mutually assess progress of actions on every level (resident, municipal) and, particularly, on their interaction towards sustainability;
5. specific cases – ICZM case studies carried out in a particular municipality, and recommendations are given to municipality on further development of the territory.

Training module 2 on Coastal communication for sustainable development aims at providing an overview of both theory and practice of environmental communication in general, and municipal environmental communication in particular, and to present best practice of coastal communication in Latvia. It emphasizes the **communicative environment** as the primary driving force in successful implementation of environmental management and in ensuring sustainable development of a territory, as well as the

imperative of **systemic municipal coastal communication governance** as a prerequisite for sustainable coastal development. The theoretical basis of coastal communication consists of following basic concepts:

1. coastal communication for sustainable development is seen as a thematic subtopic in environmental communication aimed at the efficient governance of interaction between the natural and socio-economic environments;
2. collaboration among all actors and interested groups is considered to be the focal element of coastal communication and environmental communication in general.

TM-2 on Coastal communication for sustainable development focuses on environmental communication management implementation at the local level and comprises activities, particularly, collaboration imperative, by all key interest groups and scope of their interests, emphasizing in particular on two key target groups in their communication: **municipality communication management on one side**, selecting integrated and/or disciplinary planning and management approach, and **resident (household) communication development** on the other side.

In studying this interaction of the top-down and bottom-up approaches, five concepts are realised also in **TM-2 module**:

1. environmental communication management concept and approaches;
2. municipality communication management by integrated and/or disciplinary approach
3. residents, NGO's etc stakeholders experience for best communication practice;
4. new **social instruments** and **collaboration communication** prerogative - how to mutually interact and work complementary on both levels (resident, municipal) and, particularly, in their interaction with everyone other stakeholder;
5. specific cases – coastal communication case studies carried out in a particular municipality, and recommendations are given to municipality on further development.

The module outlines the concept of environmental communication and existing theoretical framework as well as giving practical examples from municipal experience in environmental communication planning and implementation (incl. guidelines for drafting action programme), key approaches, and describes the principal elements of environmental communication and the key actors (or target groups) in environmental communication.

It should be taken into account that the developed materials are basically embedded in the Latvian context, which means that not everything might be appropriate or applicable in the educational /training practice of other countries.

3. Environmental Communication: Collaboration Principle

This material outlines shortly our work to date on coastal communication and provides background information on environmental communication in Latvia. This introductory material includes chapters on *Environmental communication: concept and theory* and *Environmental communication research in Latvia*.

3.1. Environmental communication: concept and theory

Environmental communication is an essential environmental management instrument along with the legal, economic, planning, administrative and infrastructural instruments in preventing environmental degradation, in ensuring sustainability and in achieving a change in understanding, attitude and behaviour. It is an efficient instrument in search for sustainable solutions and in environmental policy planning and implementation, and it has an enormous potential for targeting key environmental objectives: building environmental awareness, sustainable lifestyles and environmental co-operation among all parties involved – which is a well-acknowledged fact in the developed world near and far.

Environmental communication is first and foremost an interdisciplinary science as it stems and derives its theories from a number of different sciences, i.e., communication science, sociology, social psychology, cultural anthropology and others. When looking at the environmental communication approaches applied by key environmental communication scholars and research institutes in research and practice, theories and models in other sciences such as the ones mentioned above can often be found. Environmental communication experts, coming often as they do, from the field of communication, tend to focus on the specific sub-categories of environmental science such as environmental rhetoric and discourse, environmental mediation, environmental journalism, and campaigning rather than on communication as a complex system of elements interacting within a specific territory, e.g., a local municipality.

In search of a holistic, comprehensive and systemic approach towards environmental communication that would possess the greatest potential of achieving a

change in understanding, attitude, motivation and behaviour on the way to sustainability, the Department of Environmental Management at the University of Latvia Faculty of Economics and Management came up with a new environmental communication model (Collaboration Communication Model – R. Ernsteins), which has to this day served as a basis for a number of environmental communication case studies in Latvian local governments (Cesis – 2005, Liepāja, Rīga - 2007, Ventspils - 2009 – among others) carried out as co-operation projects between selected local governments and the Department.

The developed model can be considered the most comprehensive systemic approach towards environmental communication as it pools into a coherent system all of the key elements (or dimensions) that form a joint communicative environment - environmental information, environmental education, public participation and environmentally friendly behaviour. No such pooling has been offered by other communication models. Thus, it aims at illuminating the interaction of the four notions (often disengaged both in theory and municipal practice) and discarding the traditional information-focussed approach. The model also insists that the potential of the combined force of these four communication dimensions can only be utilised to the full extent through ensuring co-operation and partnership among all target (stakeholder) groups involved. Thus, this model is based on the imperative of two complementarities: the complementarity of the four environmental communication dimensions, and the complementarity of all target groups working in partnership.

As the first step, the environmental communication model was applied in the first national Environmental Communication and Education Strategy. Subsequently, the model was adopted in collaboration research projects in the local governments of Latvia, applying it as a methodological research framework and focussing on the above four dimensions and their interrelations in and among all key target groups. In some studies, an additional methodological approach was applied by which environmental communication was studied in four distinct social environments (domestic, professional, study, public). Over the course of research projects, environmental communication has grown into a separate vigorous sector along with the traditional environmental management sectors such as waste management etc.

3.2 Environmental communication research in Latvia

The environmental communication research projects of the University Environmental Management Department analysed include coastal municipalities such as: Ainaži, Salacgrīva and Ziemeļvidzeme Biosphere Reserve; Kolka, Dundaga and Slītere National Park; Lapmežciems and Ķemeru National Park; Liepāja city; Roja parish; Ventspils city. Environmental communication research in Latvia can be systematised according to the key model topics. The total of four research profile blocks and 20 model topics have been determined:

- Profile blocks No.1 – environmental management sectors.

Model topics:

- 1) waste management;
- 2) biodiversity/ EPNA;
- 3) water management;
- 4) air/ climate/ environmental noise management;
- 5) tourism;
- 6) forestry sector;

- Profile blocks No.2 – target groups.

Model topics:

- 7) local government;
- 8) public governance institutions;
- 9) business sector;
- 10) educational facilities;
- 11) science sector;
- 12) NGOs;
- 13) the media/ public relations;
- 14) residents;

- Profile blocks No.3 – environmental communication dimensions (instruments).

Model topics:

- 15) environmental information;

- 16) environmental education;
- 17) public participation;
- 18) environmentally friendly action;
- 19) environmental awareness;
- Profile blocks No.4 – sustainable coastal development.

Model topics:

- 20) coastal communication.

Research has been systematised into the above profile blocks so as to create a statistical overview displaying which model topics under the specific profile blocks have been studied the most, and which specific aspects of the topics have been covered to date. Based on the systematised overview, detailed analyses of each profile block and model topic can further be undertaken.

The aim of the collaboration research projects (apart from situation assessment and problem identification) was twofold: first, to produce a real applicable end-product in the form of a locally tailored environmental communication (or in some cases – environmental co-operation) policy plan and/or action programme proposal, and second – to give an initial boost to the further local environmental communication process development, broaden the outlook of the target groups so as to reveal the unacknowledged vast potential of environmental communication in building local environmental awareness, facilitating participation, expanding the usual confined frameworks of co-operation, breaking the traditional perceptions and stimulating new innovative approaches. In all of these studies this twofold aim – to varying degrees but by all means considerably - can be said to have been achieved. Even more so – in a number of local governments, the proposed communication and collaboration model has subsequently been adopted and integrated into the municipal environmental policy planning process. This has been implemented either through a disciplinary approach – namely, by including in the environmental policy plan a separate chapter on environmental communication (Cesis, Liepaja etc.), or through integrating environmental communication aspects into the environmental policy plan and development programme (Livani).

The collaboration communication model has received positive feedback from the local governments where it has become part of their municipal planning mechanism. As acknowledged by the environmental experts of these local governments, the four-dimensional environmental communication model has given an impetus towards building new partnerships, finding creative solutions, and broadening the scope of activities. Integration of environmental communication into the planning documents, being a political commitment, has facilitated the implementation of these issues into practice and has helped bring them to the forefront when designing specific action programmes and investment projects.

Coastal communication for sustainable development can be defined as communication and collaboration among all actors and parties with the aim of ensuring a balanced development of the three pillars of sustainable development – the social environment, the economic environment and the natural environment – in the coastal territory as a single area with common characteristics. Communication is one of the five tools for integrated coastal zone management (apart from legislative, planning, economic and infrastructural instruments) - to promote sustainable management of coastal zones

Coastal specifics. As in any other territory, the interests of nature and the social and economic interests of man often collide, and the more so in the coastal area with its ecological, cultural and historical specifics and appeal. In addition, there are often land and sea conflicts in the coastal area, and man is in the middle of this conflicting environment. Communication is the channel through which these conflicts can be resolved. An introductory material has also been drafted for the development of local environmental communication programming guidelines. Local policy planning is based on the key principles of quality management cycle, transforming it into the 4P environmental management cycle model: problem analysis (1P); policy definition (2P); policy planning (3P); programming (4P). The model contains the following key components: policy values and intentions, aim and principles, declaration; planning preconditions and resource basis; objectives, instruments and indicators; action programme, its implementation and review.

To sum up, the environmental communication case studies in the Latvian local governments have served as pilot research into the potential and possibilities afforded by

the proposed four-dimensional (environmental information - environmental education - public participation - environmentally friendly behaviour) environmental communication model. This research has yielded positive results as to the model's practical applicability in environmental communication process initiation and facilitation, stimulation of target group/stakeholder self-activation for co-operation, dialogue and increased participation in building a sustainable local community. The integration of the proposed environmental communication model into municipal documents can be considered a further achievement towards the effective application of this valuable instrument on the local level and possibly even beyond. In order to facilitate its full-fledged and comprehensive planning and implementation, environmental communication could be developed as a separate sector in environmental management.

3.3. Environmental communication – four partite cycle development

Environmental awareness being as one of the main preconditions for sustainable development, maintenance and improvement of environmental quality, in practice, for general public and for every one of us can be expressed as environmentally friendly action in any field of life, work, leisure and social activities as well as active participation in decision making processes on sustainable development. Since environmental or sustainability problem solutions are strongly correlating with level of knowledge, understanding of situation and sense of responsibility then not only politicians and environmental/municipal specialists, but everybody of us, esp. when being in local areas and confronted directly with those problems, becomes the decision-maker – taking action or staying aside.

Sociological researches also in Latvia often have shown (3;4) that public is not enough informed on different environmental issues and also the role of the state institutions and municipalities has been evaluated as quite low. Unfortunately also known information and education instruments are not always incorporated in the environmental management projects, information process is traditionally fragmented and information is located at different institutions and organisations and public does not know which establishment/institution should be addressed and what are the options for involvement in

decision making process as well as there is insufficient coordination between non-governmental environmental organisations, lack of purposive and positive sustainable communication programs, what all hinders the development of effective environmental management and environmental friendly life style. Subsequently, the development of different representation forms for promotion of dialogue and seeking compromise among official institutions and various public target groups is no doubts essential and so already perceived at nowadays environmental protection development stage.

Results of the assessment of LA21 activities and also public environmental awareness development in Latvia indicate the need for an **environmental communication system and related process** development with involvement of all main actors in the field - Ministry of Environment and it's institutions, other ministries and institutions, municipalities, general public and public organisations, business organisations, mass media and educational establishments et. al. as pretty often the application of information/education principles today is complicated as the cooperation between different target groups in context of environmental policy implementation is just under development, i. a. also because of the continuing process of self-organisation of different target groups..

To encourage dialogue and development of mutual agreement process and to ensure formal and informal cooperation and environmentally friendly behaviour of inhabitants, different target groups and institutions of public administration, not only the development of normative acts and other traditional instruments, but also innovative creation of the necessary preconditions, incl. complementarity of communication components/steps and effective mechanisms of implementation are required.

Taking into account all known and again mentioned above and after testing effectiveness of new approaches elaborated during LA21 facilitation processes in Latvia environmental communication could be defined more comprehensive and extensive as traditionally used to, particularly including also action oriented part, aimed and created by "information and education flow" - public response and participation. Environmental communication is then viewed as multilateral information exchange and **cooperation enhancement process** based on and including four following components:

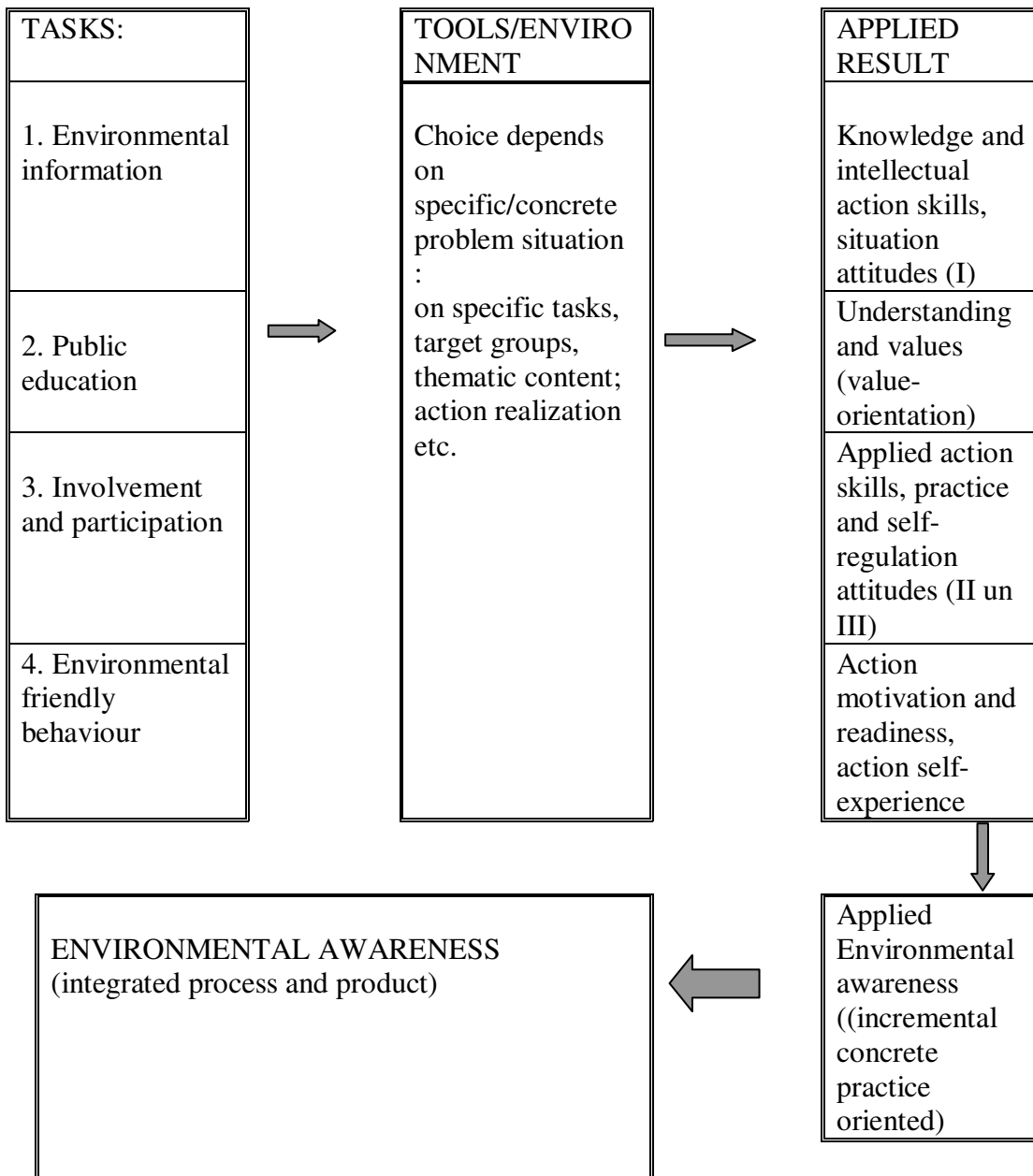
- information and

- public education (target groups oriented),
- participation and
- environmental friendly behaviour,

being required for successful development of identification, assessment, decision making and implementation phases of environmental management.

Hereinafter we propose innovative **model of incremental environmental communication cycle (3)**. This figure (see Table 1) demonstrates the linkage between environmental communication tasks or the cyclic basic steps of communication process and pedagogical/practical results that within the particular cycle ensure applied and concrete practical case oriented environmental awareness development, but within the multi-cycle integration - the process of repeating and inter-supplementary **self-experience** development, what is facilitating general environmental awareness enhancement.

Table 1. Incremental environmental communication process – four partite cycle model



Appropriate environmental communication result have been measured as knowledge and practical skills, understanding and ability to solve environmental problems, up-to self-regulation attitudes, motivation and readiness for concrete action and obtained experience for case related target groups as well as each individual in general.

The four partite incremental environmental communication cycle model demonstrates the necessity for all **four basic elements and their direct and cyclic interaction** within **environmental communication** process as identified in the definition

and latter development of National Environmental communication and education strategy (4) which can be mentioned as one of the nation wide applications of this theory and practice based development.

3.4. Local initiative and self-experience development.

Environmental communication theory developments into practice appears to be crucial for local population/interested individuals and local experts/specialists/decision makers participatory capacity step wise creation and further self-organized application towards local municipality development (3). If we would pose simple questions on human cognition and perception, particularly in the process of learning and would take a look at our capability to perceive information and learn practical activities, we easily can draw a conclusion that one of the most effective life long learning approaches is the “Learning by Doing and Doing by Learning”.

Elaboration and testing/application of this known approach in practice in Latvia turned out to be further designed into a complex of LA21 process facilitation activities for local interest groups and individuals as a kind of self-experience development tool-box. So, successful LA21 process start-up and local ongoing facilitation, esp. in rural areas, depends directly on following **self-experience development tool-box components**:

- Self-active development,
- Project ideas,
- Community involvement wave,
- Interest groups,
- Facilitation team,
- Local experts involvement,
- Environmental communication emphasis.

Self-active work development. This approach or ‘learn by doing’ is advisable when working with Local Agenda inception in the local municipality. Besides, far from always this ‘doing’ has to be actually done in real life. In many cases you can illustrate in a simple way or model and imitate self-learning in process, i.e. ‘play’ it in the learning

room, e.g. in an advisor or self organised self-experience seminar on LA 21. For more than five years we have consistently applied this approach in praxis in municipality training, and particularly in Sustainable development projects. It has always yielded good results, even when working with ‘compulsory sent’ or initially negative oriented participants of courses, seminars, co-planning discussion meetings, needless to say active people in all municipalities of different levels.

Project ideas. Even very specific training seminars, public discussions, planning meetings etc would have to be organised at the local level. Moreover, the self-experience work would have to result in concrete **local development ideas** that the participants would come up with on the spot and immediately publicly present, i.e. discuss, that would lead to already formulated, and most importantly, practical results, namely **project forerunners**. It gives people an opportunity to see the results of their work directly and serves as a motivation to continue the work on the further development of the project together with the associates immediately after the training activity. As the experience of the municipality projects indicates, the projects based on the ideas of local experts and local population and implemented by the same people are the most successful.

Community involvement wave. The long term success of any municipality local development project, let alone LA 21 projects, depends on the **possession of knowledge and essentially involvement** of the community which does not require hundreds or thousands of people. It is enough with some 10-20 actively dedicated representatives of the community. Besides, sometimes it can be achieved during a one day seminar with the participation of some enthusiastic individuals or, for instance, by conducting a public survey (broad, but focused surveying of the community, i.e. families, etc.) with participation of local activists and an active feedback after it. In this way, step by step, and particularly through further work of the local activists after the seminar, a “community involvement wave” is created.

Interest groups. Community involvement generally and support and/or encouragement of separate active individuals is of high importance. However one has to work towards involvement of the main professional and other **public interest groups**. Participation of such both formal and informal groups ensures a successful unfolding of the specific seminar, work team, discussion group or public forum, practical development

of forerunners to be implemented in the municipality, resonance in the community (serving as a trigger for action at the local level in the municipality), as well as change in the local people opinions on **initiation of the community involvement process**. The theory and praxis in Latvia proves that most effectively planning is carried out in a team, since the result achieved thus is more comprehensive and of better quality. Most importantly it is more creative and thoroughly discussed, besides the many local authors behind it usually carry it out as well.

Facilitation team. A team is a well organised **group of local activists** - motivated and active people with an initially determined and accepted common goal (work vision) - that works in a new quality. They work in close cooperation, and harmonious spirit, **complimenting and supporting each other**, consequently achieving more than if working alone. The team members highly value the results of the work and are collectively responsible for it. They achieve results of good quality applying new and often **unusual and original solutions** produced by joined efforts. When starting work with LA 21 creation in a municipality or when applying the well-balanced approach to only a separate sectors, problem topics or even simple projects one should try to form teams consisting of 3-7 active individuals, most importantly by encouraging and maintaining any **motivation** to achieve the planned results.

Local experts involvement. We should emphasize that also for the municipality development projects that necessarily require involvement of external experts, i.e. different advisors and consultants, it is crucial to involve in the **preparation and execution of the commissioned work** local experts and activists, or representatives of NGOs too. Thus facilitating acquiring of highly precise knowledge on the local situation and implementation by own efforts, as well as **local self-experience development**.

Environmental communication emphasis. Irrespective of the involvement maturity level of the specific community in Latvia one would have to launch an environmental communication (information, education and involvement of the community, examples of environmentally friendly activities) and the specific communication forms. Municipalities that already have the experience have to develop it further promptly as it is the main prerequisite for local development in general, and LA 21 development in particular. We have also to highlight a seemingly **unconventional**

method for community involvement and interest creation – self-experience **seminars** – application for local community target groups self-experience and initiative development seminars in municipalities. This approach has proven to be effective not only in municipalities ‘beginners’, but also for project planning and development in already active municipalities where the involvement of the communities at large, individual activists and the main target groups, and/or interest groups is not widely developed – consequently all Latvian municipalities.

Some of the initiatives brought forward can be implemented rather simply, others will require longer period of time (even several years). The latter can be an indicator of a certain degree of maturity of the society, and the seminars demonstrated that there are some realistic ways for implementation. The further implementation now will chiefly depend on the cooperation between the local community initiative groups and the community target groups. In most of the cases the seminar has served as a real trigger to start initiative implementation.

In self-active work seminars in municipalities their creators and/or leaders (independent experts) only suggest and open the main topics of the seminar, as well as organize teamwork of the participants, guide and stimulate discussions, generation and formulation of proposals. Most importantly all of the **seminar participants**, advisably/desirably representatives of the main interest groups and target groups and local activists through interactive team work during the main part of the seminar have themselves put forward, evaluated and prioritised the specific **local ideas** and will do the further developing of the ideas and projects **during the seminar and later in praxis**. The seminar output is not only information acquiring and exchange, but also involvement and esp. developed concrete ideas and projects, comprehensive self-experience, and mastering of action means, finding of cooperation partners, which is also important for further development of the projects, deeper knowledge on the local activists and leaders/organisers.

The Latvian public opinion is concerned not merely with economic development. Elements and parts of local agenda for sustainable and democratic development in local and district municipalities (possibly not well enough structured yet) that join local

economic, social and environmental resources in the development of their territory and community can be observed.

4. Sustainable Development: Local Agenda 21 and Municipal Education for Sustainability

Raimonds Ernšteins

4.1. Local Agenda 21 Sustainable Development Process Facilitation: Local Level

Successful application of sustainable development principles are determined by its realization in the public administration level closest to inhabitants - in local municipalities. Local Agenda 21 (*LA 21*) or Sustainable Development Action Programs (SDAP) for local and regional levels are to be elaborated in municipalities for the integration of sustainable development's principles into municipal every days practice and promotion of cross-sectorial cooperation, and this is to be done in direct and compulsory community consultation process.

Local Agenda 21 process in Latvia as the same elsewhere in Eastern Europe has begun later than in the Western and Northern part of Europe and occurs gradually and occasionally, notably because of the general lack of joint international and particularly state support as well as minor self-interest of municipalities - municipalities has been missing basic information and it was not in practice really clear what for and what exactly and through what kind of means can take place for LA21. Nevertheless the growing experience of the most successful *LA 21* processes in Latvia does not practically differ in quality from the rest of the world. Activities which in substance correspond to *LA 21* content (int. al. elaboration of municipal environmental policy and action programs etc.), but are not respectively named as LA21 take place more widely and actively - energy management projects, national water and waste management upgrade implementation programs at the local and regional level etc. have to be noted as well. For the time being *Local Agenda 21* process has been started in relatively few municipalities in Latvia, i.e., 20 different level municipalities declare this for international inquiries, but since these are mostly town municipalities, including the capital city - Riga, then formally we can conclude that in the overall almost 50% of all inhabitants of Latvia live in these sustainable development approaching municipalities.

Municipalities of Latvia like ones from other countries participate in cooperation with different international organizations as well as successfully do realize various networking projects. Cooperation with International Council for Local Environmental Initiatives (ICLEI), Baltic Local Agenda 21 Forum (*BLA 21 F*), Union of Baltic Cities (UBC) and others, int. al. in elaborating sustainable development strategy for cities of the Baltic Sea region, shows good progress. Many municipalities are involved in the Alborg Sustainable development Charter process since its very beginning and have signed accession papers.

Experience gained from sustainable development pilot projects in Riga, Jurmala, in the Bartava and North-Kurzeme regions etc. (1;2) allows an LA21 process evaluation to be made showing that several Latvian municipalities have practically passed through first steps of experience and acquired the major skills needed for sustainable development planning:

- the first sustainable development concepts and strategies at the regional/subregional municipal level have been developed;
- methods for public involvement have been developed and tested, the recommendation for appropriate activities prepared, etc.;
- methods for the preparation of sustainable development indicators (bottom-up, top-down) have been developed, tested and applied;
- municipality level sustainable development strategic plans and action plans have been elaborated;
- the first models for sustainable development action programmes covering the various levels of local government have been developed and tested.

In Latvia as well as in other countries *LA 21* process has been launched very differently, activities and number of local and regional municipalities varies as well, nevertheless, *LA 21* already by now puts the most active municipalities in considerably better environmental and economical position than others. Sometimes process realization is too formalized, without substantial changes in municipal administration and public participation.

Local Agenda 21 action programs are being developed not only in municipalities, but also in e.g. schools, which also acts as an important catalyst for local Agenda 21

development. However, it will take a much **longer time** and, most importantly, **innovative approaches and instruments**, to begin really full scale implementation of local Agenda 21, as significant changes are required in the everyday management of municipality activities and the organization of Agenda 21 work, the identification and involvement of major target groups, and the securing of necessary resources.

4.2. Local Agenda 21: Application Principles and Approaches in Practice

LA 21 application projects in Latvia has been designed, realized in practice (at different level of self-governance with various success and further continuity) and also studied as municipal case studies. There is to be recognized step-wise LA21 process development in Latvia with following general governance level characteristics:

- preparatory stage at national level – neither real top-down nor bottom-up activities developed, however National strategy elaborated and implementation under monitoring as well as national Council established (at the Ministry of Environment);
- related occasional activities at regional/district level (except full scale process launched at North-Kurzeme coastal region) – e.g. initiatives on healthy communities;
- local level – pre-dominantly top-down approach is developing with very limited public involvement, initiated mainly by:
 - international projects (EU, Baltic region or bilateral) – “outside force” and financing facilitation,
 - active and for LA21 interested municipal employees looking for different options to initiate at least separate LA21 related activities,
 - few municipal LA 21 centers established;

Public participation and partnership development between main most interested stakeholder groups indeed characterizes LA 21 development in the country. We can list nowadays most active and process influential actors:

- Interested individuals - municipal administrators and specialists,

- Knowledge institutions (universities, professional NGO's and also new consultancies),
- International project partners (municipalities and others),
- Ministry of Environment, particularly Environmental Protection Fund,
- Groups/associations of neighbor local municipalities (voluntary agreements as inter-municipal cooperation facilitation and also optional legal transitional stage within national administrative-territorial reform);

Actors for time being in supportive roles could be listed as follows also:

- Local inhabitants – established local/regional professionals (individuals/non-formal groupings) interested and self-involved in local development activities (also searching for post-experience post-graduate interdisciplinary education);
- environmentalists, planners, governmentals, teachers, social and culture workers etc.;
- Latvian National association of municipalities (incl. all sub-associations);
- National NGO's ,particularly those with regional/local chapters;
- First citizen groups established.

Perceived understanding of the LA 21 process development until now and necessity to elaborate further steps ahead is leading us to formulate some **basic preconditions** – some **principles and approaches, working models and instruments** - required to be fulfilled now and here in Latvia for any successful continuation at all.

One principle appears out of general notion of integrative and disciplinary realization possibility of LA21 process and its documentation. LA21 ongoing processes and main actors involved predominantly clarifies the need for reconsidering a following **principle - mutual interlinkage of integrative and disciplinary LA21 approach models** (2) – to be done in both in theoretical planning and in practical realization. Consequently, elaborations of sustainable development planning and SDAP guidelines (usually the first written material in Latvian municipalities at the beginning of LA 21) in particular, can be further developed, namely:

- elaborated as a separate document and process (*disciplinary model*) - LA 21,

- integrated in all existing plans (*integrative model*) and/or used in elaborating new development strategy plans, projects etc.
- mutually integrated and interlinked processes and documents – integrating both approach models above (*mixed model*)

For municipality as still evolving multifunctional system in the current conditions of general development in Latvia and taking into consideration existing LA21 cases of experiences both sustainability implementation models shall be used as much as complementary and mutually integrative e.g. mixed model.

Also in the context of sustainable development planning in municipalities in general (in seminars with interest group participation in particular) the quality of the achieved results in LA21 elaboration was ensured by the elaborated integrated **methodology**:

- **integration** of strategic planning **and** action planning approaches
- mutual **integration** of the different, frequently separated **municipal operational sectors** in the planning process (in the seminar)
- elaboration of sustainable development **indicators** used for planning and measurement and later evaluation of the **achieved progress** in sectorial or LA 21 context (preferably visions and aims), especially realizing it in community-initiated way.

Another principle appears important nowadays in Latvia is related to the all three LA21 **process implementation** models (2;3) – participatory process itself, cross-sectorial and interdisciplinary content of LA21 process and also action planning structure models. These implementation models for local sustainable development action programming are both exploratory/explanatory for training/education purposes of municipal specialists and understanding/awareness development of general public, but also can be successfully realized in practice if taken into account as a **coherent whole** for LA21 planning and management at local/regional municipalities. There is following principle - **complimentarity of tripartite process, content and structure LA21 implementation models**.

There are to be accounted in Latvia already experiences with all three traditional LA 21 application approaches starting by top-down and bottom-up cases and continuing

by LA 21 centre intermediation. Also there are first elements of new innovative cases of LA21 application approaches – instrumental integration and disciplinarisation approaches, including 3 different interesting sub-approaches being really perspective taking into account existing conditions in Latvian municipalities. The following is the list of case studies developed and explored in Latvia and four Local Agenda 21 **process approaches** formulated:

- Municipalities Pledging Approach – City Council Planning (Jurmala city LA21 top-down planning case),
- Public Involvement Approach - Region Agenda 21 Participatory Process (Bartava grouping of municipalities LA21 bottom-up involvement case),
- Intermediary Facilitation Approach – Regional Agenda 21 Centre (North-Kurzeme coastal region LA21 centre case)

Instrumental Integration and Disciplinarisation Approaches:

- Ecotourism and Local Integrative Development and LA21 (ecotourism as a tool and municipality development sector)
- Local School Agenda 21 for Municipality LA21,
- Cultural Heritage for LA 21 – Museum Involvement Case (approach, tool and centre).

Particular interest could be devoted to the very last one mentioned as perspective of culture environment to be used as **cornerstone for LA 21** process development in comparison to the traditional European approach via environmental protection seems to be thoroughly embedded in Latvian culture heritage development traditions.

Also all four process approaches are by definition complimentary and best possible application are to be as much as relevant.

Case study designed, developed and implemented in Nort-Kurzeme coastal region (Dundaga, Roja and Kolka municipalities) – “Livonian Green Coastal region 21” was realised as LIFE ENVIRONMENT project – has been aiming to tackle most if not all eventual approaches, to apply some of the models and to use widely communication instruments and techniques(2). Case study results analyzed permits to conclude, that combined version of all four LA21 process approaches has been tested successfully (

however with different degree of quality fulfilment) and proves to characterize the fifth process approach - **facilitation as structural network approach**.

Public participation in general and all stakeholders co-operation for sustainable regional development are to be facilitated not only via:

- separate innovative demonstration projects (particularly successful model in Latvia) or other type of activities, but shall be
- planned and participatory implemented as **coherent networking program** (also to be seen as demonstration network).

Components of this coherent whole approach were developed as a kind of regional sustainable development action program (structural network):

- conflict resolution and partnership practice as overall framework,
- round table forum and public participation as bottom-up process,
- council for sustainable development of region as top-down process for collaborative and integrative decision planning,
- regional *Agenda 21* centre as intermediary facilitation and partnership coordination,
- rural communication and information network as well as regional sustainable development implementation demonstration projects etc as instrumental integration and sectorial development.

Accordingly to North-Kurzeme case particularly but also taking into account other case studies, there is to be concluded that university-municipality partnerships proved to be the main driving force behind enhancement of LA21 process in Latvia, particularly in terms of **incremental environmental communication** development – information, education, participation and environmentally friendly behaviour – and **self-experience facilitation** as two basic LA21 facilitation instruments (instrumental approach) and also preconditions.

When preparing and taking a decision on the **planning and practical implementation** (parallel processes!) of sustainable development in own municipality, it is vitally important to start with the **experience and ideas** that have been crystallized in different municipality development projects in Latvia. Likewise, far from everything in the LA 21 work has to be started from scratch, as every municipality has their own

forerunners even if they are called differently. However, in LA 21 work it is important to choose approaches and models corresponding to the needs of the present development level of the rural areas, to choose concrete first steps and projects for **every individual, i.e. subsequently different municipality**.

Our experience as one of the initiators of LA 21 in Latvia shows that it is important to start LA 21 with **local initiatives** (int. al. those from the advisors) with situation study and evaluation, consideration of the community and interest groups' opinions and their participation, as well as in creating of initiative groups and project development, etc. Further we will separately deal with some of the theoretical, as well as practical approaches in local initiative creation and particularly with environmental communication and so called **self-experience** development (experience acquired by stimulated active work of the individual that at the same time is applied in the further acquiring of experience). It should be pointed out that the ultimate result is to be a "resonance and openness for action" and the most important conclusion drawn from our experience is to do everything that could promote creation of positive attitude towards innovations in municipalities so as to encourage the local experts and local population to accept the new ideas and opportunities, initially at least paying attention to and desirably considering them.

Conclusions. LA21 application projects in Latvia have been designed, realized in practice (at different level of self-governance with various success and further continuity) and also studied as municipal case studies. LA21 process development will take a much **longer time** and, most importantly, besides traditional also **innovative approaches and instruments** elaborated and applied. **Basic preconditions** (besides traditional resources necessary) are to be developed for Latvia – applied LA21 **principles and approaches** as well as emphasizing development of **incremental environmental communication** – information, education, participation and environmentally friendly behaviour – and **self-experience facilitation toolbox applications**.

There are in Latvia first experiences with all three traditional LA 21 application approaches starting by top-down and bottom-up cases and continuing by LA 21 centre intermediation. Also there are first elements of new innovative and really impacting cases of LA21 application approaches – instrumental integration and disciplinarisation

approaches as well as combined version of all four LA21 process approaches has been tested and proves to be characterized as the fifth process approach - structural network facilitation approach.

4.3. Municipal Education for Sustainability

Municipal sustainable development (SD) process and education for sustainable development (ESD) in general, but, especially at the municipalities, obviously are to be seen in close and mutual interlinkage. In the case of Latvia we shall recognize, that different sustainable development action program (SDAP) projects and activities do involve or at least do facilitate ESD and particularly municipal education for sustainable development (MESD) enhancement locally and step wise its dissemination further around, but not often are to be seen opposite – purposely developed ESD and introduced into municipal/sustainability planning. Several active periods of ESD promotion in Latvia have been directly linked with initiations of particular international processes and documents – UN Decade of ESD (2005-2014), UNECE Strategy for ESD and, most effectively, after adoption of the ESD process development guidelines (Baltic Agenda 21-E) for the Baltic sea region countries (2002) – unfortunately, having no long-term impacts for MESD, except isolated research and education/training activities mainly by universities.

There is still an urgent need (Ernsteins R., 1998, 2002c, 2005b) for further/adult education/training (probably with ESD priority) ought to be theoretically and practically combined with practice of SD contents and processes in municipalities for both general system as well as specialized training programs. Careful preparation is needed, particularly in the relation to the specific target groups and practical experiences to learn from. Distance education, including internet resources, are successfully developing and will have major influence in further education for municipalities in coming years.

This overview article on MESD experiences in Latvia, being based on both SD practice oriented and theoretical generalizations background, is aimed to summarize R&D project developments achieved in the university-municipalities partnership by the Department for Environmental Management (DEM) of the University of Latvia during

the last ten years (1998-2009) and covering two initial periods (testing and enhancement ones) of municipal SD development. Recommendations for MESD development in Latvia will be prepared on some short applications of theoretical conclusions taken from previous articles and abstracts published (see the bibliography list) and several, main approaches demonstrating, case studies, being illustrated here. Main concept being developed and widely tested during mentioned time frame in Latvia has been set around the collaboration practice model of SDAP development and municipal implementation (ErnstesR.,2006a), particularly stressing importance of the local development conditions based personal **self-experiences** facilitation and local traditions based community **sustainability communications** encouragement in their **complementarity** as for MESD. Collaboration governance approach is to be stressed also.

The main study methods applied are the case study research applications (consisting of at least on spot municipality studies, observations, document analysis and interviews with local case main stakeholders), including, first of all, the self-development and analysis of SDAP and/or Local Agenda 21 (LA21) projects, processes and related education programs, designed and implemented by DEM, as well as various performed SD surveys in 2000, 2004, 2006 and 2007. SDAP application projects in Latvia has been realized in practice (at different level of self-governance with various success and further continuity) and also studied as municipal case studies do allow to presume (ErnstesR...), that for successful ESD nation wide establishment it shall be initially started very locally with emphasizing, facilitating and spin-off developing of SDAP as well as carefully taking into account local traditions. Let's further study the situation shortly and some existing cases and experiences.

There is to be accounted wide range of sustainable development (also LA21) pilot projects in various types of the municipalities in Latvia, e.g. worthwhile to mention cases in Riga, Jurmala, Cesis, as well as in the Bartava and North-Kurzeme regions. These municipal SD practices were gathered already in second half of 1990-ties and early years of current decade (first municipal SD application period), what allowed us to conclude (Ernstes R. 2002a, 2006c), that a number of Latvian municipalities have gained not only first experiences, but also really acquired the main knowledge and skills needed for SD planning and implementation, incl. methods for public involvement and self-

participation have been developed and tested. Experiences acquired, both general SD process ones as well as specific locality based approaches and even some elaborated models (Ernsteins R., 2002d) , were publicized (universities, Union of Self-governance) corresponding to the present development needs in Latvia for every individual, i.e. subsequently different municipality.

Municipal experiences included all three traditional LA21 application approaches, starting by top-down and bottom-up cases and continuing by LA21 centre intermediation as well as university-municipalities partnerships have initiated also some non-traditional cases of LA21 application approaches – instrumental integration and disciplinarisation approaches (e.g. based on ecotourism as a tool and municipality development sector, Local School Agenda 21 and cultural heritage case with museum involvement as an approach, tool and mediation centre). General conclusion after those first comparatively positive SD implementation trials were stating (ErnsteinsR.,2002a,2006c) – municipal sustainability introductory process will take much longer time and, most importantly, innovative approaches and instruments, to begun really full scale implementation of LA21, as significant changes are required in the everyday management of municipality activities, the identification and real involvement of all target groups, and securing the diversity of necessary resources, particularly, human resources.

These guidelines taken towards the second municipal SD enhancement period brought main stakeholders and, first of all, university-municipality partnerships to more specified and especially human resources developing sustainable development action program (SDAP) projects (incl. emphasis on state required municipal development planning system instead of LA21 approach). In the conditions when general interest on municipal SD processes in Latvia were slowing down, there was further elaborated and step wise tested collaboration practice model of SDAP development and municipal implementation (Ernsteins R., 2006b) as complimentary set of elements for sustainability governance and management facilitation:

1. collaboration/partnership research as start-up **precondition** and then project based SDAP development background,
2. structural network facilitation approach for LA21 development as **framework structure** for process facilitation,

3. self-experience facilitation/approaches toolbox as activity **process development**;
4. four partite incremental environmental communication cycle as LA21 activities **content development**.

Education for sustainable regional/local development is to be seen as interlinked and mutually beneficiary for both theoretical approaches elaboration and later realization at various education levels, types and systems from one side and its local/regional municipal practice activities development in Latvia from other, what will be discussed ahead using some case examples.

4.4. Process Development: Self-experience Facilitation

During realization of the university-municipality education/training projects and courses in Latvia in the 1990-ties (Ernšteins R., 2002c,d) there were compiled and tested the complementary set of ESD training approaches and methods based on a number of formerly wide known but now in the Latvian local practice re-designed participatory education activities. Municipal practice development oriented end product designed, discussed and evaluated in the self-planned various stakeholders participated group work formed the basic preconditions for the development of so called self-experience - experience acquired by stimulated active work of the individual at local conditions based facilitation/training exercise at the same time being applied in the further acquiring of experience.

This kind of self-experience development tool-box were initially full scale tested during Bartava SDAP model-project (Kudrenickis I., 2002c, 2004) and later municipal ESD training programs and was recognized as being crucial for local population/interested individuals and local experts/specialists/decision makers initiative and participatory capacity step wise creation and further self-organized application towards local municipality development. Complementary work to be done and the must of local SD initiation is to be creation of positive attitude towards innovations in municipalities so as to encourage the local stakeholders and general public to accept the new ideas and opportunities – necessary climate of “interacting resonance and openness

for action” (Ernsteins R., 2002e, 2006c). This is to be started with situation study and evaluation (particularly collaboration research), consideration of the community and interest groups opinions and their participation, as well as facilitating self-organizations of local initiative groups and corresponding project development, etc.

There are to be recognized following self-experience development tool-box components: self-active development and project ideas, community involvement wave and interest group’s participation, local facilitation teambuilding and local expert’s involvement as well as environmental communication emphasis (ErnsteinsR.,2006c) Self-experience work would have to result in concrete local development ideas that the participants would come up with on the spot and immediately publicly present, i.e. discuss, that would lead to already formulated, and most importantly, practical results, namely project forerunners. Local facilitation team is to be encouraged as a well organised group of local activists working in close cooperation, and harmonious spirit, complimenting and supporting each other, consequently achieving more than if working alone, achieving results of good quality applying new and often unusual and original solutions jointly produced. Complementary reinforcement of information, education and involvement of the community, examples of environmentally friendly activities and studies and use of the specific local conditions based formal and non-formal communication forms are those required activities to overcome this still main local development obstacle.

Bartava sustainable development case as self-experience bottom-up facilitation approach. After general approach introduction let’s examine a concrete example of using self-experience development toolbox in the municipal cases in Latvia - elaboration and realization of the first Sustainable Development Action Program (SDAP) model-project (authors - R. Ernsteins, I. Kudrenickis, A. Builevics, G. Strele, 1998) in Bartava region (nine local municipalities in Southern Kurzeme region) as still in terms of content and volume the most thoroughly prepared and fully completed municipal sustainable development planning project. This SDAP planning and implementation process actually represents and, even more, triggers municipal education for sustainable development (MESD) process in the municipality for all main stakeholders and general public as well. Applied SDAP methodology elaborated for the project has been later more

widely tested and these approaches can be applied in any municipality in Latvia at any administrative level, but certainly, taking into account as minimum following two human resources development preconditions.

Once initiated, existing process of self-activity and interest development in thus “activated” municipality could continue on its own by, sometimes even being not interconnected, gained self-experience further generated local activities or, at its best, could be further facilitated by any interested stakeholders, what certainly requires following precondition - existence of such stakeholders and/or development work needed to secure presence at the municipality of such interested and as good as possible ready to act stakeholders. In the Bartava case it was initially done by grouping of this region schools and environmental education teacher’s networking, but later by, so called, Bartava region Environmental Management Council, having different project’s based staff and, most importantly, all region municipalities as shareholders.

Unfortunately, this precondition is heavily depending on adequate human resources available very locally and being interested to be involved, what in this region was a case for some 5 – 7 years as step-wise trained project staff got more interest in more challenging higher planning level projects and moved away, but new relevant and pre-trained personnel instead was not encouraged and prepared. Of course, this correlates directly with second precondition - continuing positive attitude and feedback from particular municipalities as well as whole Bartava region leadership and officials, what is to be recognized as very important, but fortunately being not fully limiting one. In the current example of the Bartava post-project situation, those preconditions, actually, not requiring a great number of financial resources, were not properly dealt with and in combination with following number of municipal leadership changes, we shall recognize that local sustainable development as well as education process initiated has been slowing down and SDAP, still used as background for development of new projects, has not been further widely integrated in the daily work of this region municipalities.

At the same time, self-experience approach application in the Bartava project could be and was further utilized and at the first we will look at the content and principles of the model-project, and shortly examine the main results achieved, as well as SDAP preparations and methods elaborated for this project. Methodology and realization of the

model-project was based on generally accepted sustainable development theoretical elaborations and on practically tested innovations in Latvia. Practical self-experience development building approaches being formerly tested at different level municipalities in Latvia, were selected as the foundation for elaboration of the model-project (ErnststeinsR.,1995), particularly, in order to ensure broad and true-life public involvement and participation of all possible municipal partners and interest groups.

Looking at the set of the previously mentioned approaches and, taking into account the necessary interaction for the application of these approaches as well, it could be said - the body of the approaches can be realized most effectively exactly in this mutually complementary way, i.e., by adding to and improving the productivity of each approach (Kudrenickis I. et al,2004). In all sustainable development related and/or training projects in Latvian municipalities these seven complementary approaches could be rather simply but qualitatively enough realized within the so called public target-groups self-experience seminars (within group works on the spot , by elaborating project ideas etc.), which are, of course, supplemented with a large volume of objective and subjective information, which, on its part, is to be obtained as collaborative research/inquiry projects, also by carrying out a broad (and personalized) sociological poll, preferably with the help/involvement of local experts, pupils and other inhabitants .

The greatest effect in such self-experience seminars was obtained not only via participants group work on analyzing and evaluating the local development aspects, concrete sectors and issues, but particularly by participatory elaboration of perspective sustainable development actions, i.e., via local practice based end product-orientation. Namely, at the end of such seminar (either comprehensive version of 1-2 days or even better version of two legs seminar one day each part) participants left with positive satisfaction and future expectations after actively collaborating spent time and received partially self-developed handouts, but also with considerably raised self-experience during workshop (only facilitated by councilors) participatory process and cross-sectorial content studies - exchanged ideas, self-elaborated previously thought or brand-new projects, as well as with new-found (often even previously known) persons who share the same views for SD planning and realization of on-spot proposed and elaborated projects. This concrete and in local municipalities easily comprehensible practical project

approach become to dominate in the model-project (and later widely spread too), since all SDAP were chosen and formed during seminars as discussed and prioritized project lists being grouped in all the main municipal sustainable development sectors. Such project ideas based local SD action programs are easily to be understood and thus further prepared in order to be used in the municipal daily work either for planning of everyday activities or adjusting those project ideas generated to applications for concrete funding possibilities etc.

The quality of the achieved results in SDAP elaboration, taking into account sustainable development planning in municipalities in general, was ensured by the chosen practice methodology (incl. seminars with interest group participation in particular):

- integration of strategic planning and action planning approaches;
- mutual integration of the different, frequently separated municipal operational sectors in the planning process (in the seminar);
- elaboration of sustainable development indicators used for planning and measurement and later evaluation of the achieved progress in the particular sector or whole SDAP context (preferably as visions and aims), especially, when utilizing indicators “bottom-up” development process (in community-initiated way);
- SDAP “bottom-up” planning process as pre-planned self-experience rising work.

In the case of Bartava region SDAP model-project was possible to use all the theoretical and practical experience together in one project - in realization of the already mentioned self-experience approaches at local and regional level in Latvia – and main steps were as follows (Kudrenickis I., 2004, Ernsteins R., 2002d):

- regional inhabitants’ poll,
- elaboration of the municipality image - 2020 and sustainable development indicators initiated by the local community,
- elaboration of sustainable development indicators’ list for the whole Bartava region,
- SDAP elaboration in each regional municipality, and
- SDAP elaboration for Bartava region.

It is important to note that such model-project steps and concrete methods have promoted both previously expected and also brand-new municipal development activities. For example, after self-experience seminars separate interest associations have been established, the most active municipal experts have independently applied the methods of seminars, thus gaining new potential and different solutions in their municipalities etc. Also there are different other self-experience development activities further elaborated and applied in municipal SD since Bartava project design and implementation and so becoming widely accepted however still not so regularly used at municipal planning and/or education/training work. Taking into account above described Bartava case there are to be recognized that municipal SDAP “bottom-up” participatory and interactive planning process creates and can sustain comprehensive MESD at the very local self-governance level.

4.5. Content Development: Sustainability Communication Cycle

Sustainability development problem solutions are not only strongly correlating with information and understanding of situation, level of knowledge, but also with sense of responsibility and readiness to act. Results of the assessment of different SD project cases and related activities and also public environmental awareness development in Latvia indicated the need not only for an environmental (Ernsteins R., 2006c, 2005a, 2007b) , but also sustainability communication system and related process development with involvement of all main actors in the field - ministries and other public institutions, municipalities, general public and public organisations, business organisations, mass media, research and education development bodies and networks etc. Sustainability communication is then viewed as multilateral information exchange and **collaboration enhancement process** based on and including four following components: information, public education (target groups oriented), participation and partnerships as well as environment and society interaction friendly behaviour.

Subsequently, we proposed (Ernsteins R., 1997, 2002d, 2006c) initial sustainability practice cases based **model of incremental sustainability communication or collaboration communication cycle approach**. Elaborated and in the municipal

practice tested model demonstrates the linkage between sustainability communication tasks as the cyclic basic steps of collaboration communication components integration process and pedagogical/practical results – ESD content components. Within the particular SD issue oriented cycle this ensures applied and concrete practical case based sustainability awareness components development, but within the multi-cycle integration it is complementary leading to the process of motivated **self-experience and personal SD practice development** and so facilitating general sustainability awareness enhancement.

Appropriate sustainability communication result have been measured as knowledge and practical skills, understanding and ability to solve problems, up-to self-regulation attitudes, motivation and readiness for concrete action and obtained experience for case related target groups as well as each individual in general.

National environmental communication strategy case as for sustainability instrumental facilitation

The whole community, incl. politicians as well as all diverse target groups, still do face the environmental problems, however the level of information, professional education, experience and management skills etc. capacities to participate and act are very different. Consequently the role of communication process is constantly increasing, but communication instruments are to be recognized as exactly those ones that may become the crucial tool for environmental and sustainability development (Strategy,2000, Ernsteins R., 1998, 2000d) The four partite incremental environmental communication cycle model demonstrates the necessity for all four basic elements and their direct and cyclic interaction within environmental communication process as identified in the definition and latter development of National Environmental communication and education strategy (Strategy,2000) , which has been elaborated during 1998 – 2001 and can be mentioned as one of the nation wide applications of this theory and practice based development. According to the model of environmental/sustainability communication cycle objectives and tasks of the strategy were set, principles applied, as well as target group's approach formed and elaborated with respect to their involvement content and methods.

The main statements of environmental communication development situation at the end of last century has been defined in the strategy (Strategy, 2000) as follows:

1. Insufficiently coordinated circulation and complicated availability of environmental information, its inconsistency with needs of different target groups,
2. Low level of public education and understanding about the necessity of environmental protection and environmental problem solutions possibilities,
3. Insufficient activity of community and other target groups, as well as a lack of mechanisms for participation in decision making,
4. Insufficient preconditions for realization of environmental friendly life style and action of community and different target groups.

The aim of the Strategy (Strategy, 2000) was to ensure effective development of environmentally friendly public awareness, support different solutions of environmental problems and set out effective framework for co-ordinated environmental communication and education in Latvia. Strategy and Action Programme should have crucially contribute to promote development of the environmental communication and education (EC&E) as tools for effective environmental policy implementation, environmental institutions public relations with different target groups and more effective environmental information demanding-offering feedback relationships.

The basic principles of environmental communication listed below set up the need for realization of common state environmental policy through interaction and collaboration first with public and municipalities, but also with all other stakeholders. According to the four main communication cycle components there was grouped also the main principles of environmental communication (Strategy, 2000, Ernsteins R., 1997).

1. Environmental information circulation is to be ensured based on the following principles:

- Availability and credibility of information,
- Transparency and lucidity of information,

2. Public environmental education implementation principles ensure that environmental education comprehend the environment as the whole – through interaction between of nature and human made environment. Developing and improving

environmental education in formal and non-formal education and on all levels of public administration the following principles should be followed:

- Continuity and succession of education,
- Interdisciplinarity and integrity of environmental knowledge.

3. Ensuring of public participation is linked to the motivation for need of environmental protection, promotion individual and public interest, taking into account the following principles:

- Personal and professional responsibility,
- Collaboration.

4. Formation of environmental friendly everyday action is linked with the positive thinking, exploration of positive examples and making them public, thereby promoting the development of selected principles, corresponding normative mechanisms and procedures. The principles to be followed are:

- Unity of action independence and responsibility,
- “Think – globally, act – locally”.

Availability and participation of the particular target groups and their collaboration has a crucial role in the communication process both when preparing and implementing environmental policies. The main eight target groups (table 2) has been identified and analysed in the context of environmental communication and public policy theory and, unfortunately, the formation process of different stakeholders groups are still continuing (incl. self-organisation), what obviously is one of the aspects hindering also particular implementation of the main work directions assigned for the strategy today (Strategy,2000):

- development of environmental and communication tools within scope of ministry and its' institutions competence,
- considering competence of other sectors and environmental communication and education integration into them as integration into the strategies, plans, programs and projects of different ministries for different national economy branches and public sectors.,
- delegation of appropriate functions and co-operation with NGOs, different forms and organisations of public representation, professional organisations,

- mass media etc.,
- co-ordination of co-operation among all target groups considering different competencies and levels of administration,
- main tools are as always : legislative and normative acts, environmental protection system and infrastructure (including municipalities, NGOs etc.), planning and economical instruments, and again, but innovative, communication tools.

Table 2. National Environmental Communication and Education Strategy – content proposal (Strategy, 2000 adapted from Ernsteins R.)

Definitions
1. Evaluation of environmental awareness development
2. Interaction between state institutions and public
2.1. Competence of state institutions and co-operation with public
2.2. Basic problems
3. Basic approaches for environmental communication and education
3.1. Aim and main tasks
3.1.1. Environmental information
3.1.2. Public education
3.1.3. Public participation
3.1.4. Environmentally friendly action
3.2. Basic principles
4. Main target groups for environmental communication and education
4.1. State institutions
4.1.1. Ministry of Environmental Protection and Regional Development and its' institutions
4.1.2. Other ministries and institutions
4.2. Municipalities and their representing organisations
4.3. Residents
4.4. Business organisations
4.5. Non-governmental organisations
4.6. Mass media
4.7. Public education organisations
4.7.1. Non formal and adults education
4.7.2. General education
4.7.3. Vocational and professional education
4.8. Science and technology, higher education establishments
5. Environmental communication and education strategy realisation
5.1. Tools
5.2. Indicators and monitoring
6. Action Programme for environmental communication and education
7. Annexes

Education for sustainable coastal development – coastal communication practice case. During Interreg project development in Latvia at the DEM (2005-2007) were step wise participatory elaborated several coastal communication project products, being based on collaboration communication model former and more non-traditional applications (EnsteinsR.,2008a,2009b). First and central project backbone activity were coastal municipalities based and local development oriented participatory seminars, realized as collaboration partnerships between municipalitie's main target groups and university with jointly produced real time action planning guidelines for municipal coastal application: Carnikava municipality case - Sustainable Development Action Programme; Saka municipality case - Integrated Coastal Policy Plan; Roja municipality case – Integrated Coastal Communication Policy Plan, and even Liepaja township case – Coastal Communication Action Programme. Based on those also called model seminars, were designed and developed package of information and education materials and resources to be further used as coastal communication facilitation instruments, particularly for coastal MESD.

Coastal communication toolbox were elaborated consisting of complementary complex of coastal case studies etc. materials (both – newly developed during model seminars and related to main coastal issues, particularly, coastal communication approaches and elements as well as analysis of existing experiences in Latvia). This set of necessary materials were further used also for design and full development of distance education/training modules for coastal partnership target groups self-training on the main nature protection and coastal development themes: Nature environment, Social environment, Environmental management for municipalities, Environmental education, Municipal sustainable development management, Environmental communication. Also electronic communication platform concept and design was developed in order to introduce in future modern and nowadays already accessible even in distant municipalities communication means both locally/nationally as well as internationally between next project partners initially and then all concerned with coastal communication in our region. E-platform could be further expanded to facilitate coastal SC and ESD via discussion, even common preparation of texts/projects and real time communication. This e-platform as well as other approaches and instruments utilized do contribute to MESD.

Coastal communication action program Guidebook and Handbook on coastal communication planning and management has been also step-wise designed and elaborated during model seminars in coastal municipalities and tested. Guidebook provides detailed version of four steps approach towards coastal communication action planning for municipalities via assessing and developing communication for main environs of human life cycle - household sector, learning and working sector, public (municipal) sector. Also the integrated case of the coastal communication management system was designed. Handbook in turn represents a whole set of resource materials to develop understanding on all coastal communication cycle elements - coastal information and education/training as well as coastal participation and partnerships, and environmental friendly behaviour – all were understood and applied complementary as leading to coastal collaboration practice established and awareness enhanced.

In the meantime several municipalities in Lavia – Cēsis (2005) and Liepāja (2009) towns and Līvāni (2008) municipality - converted and integrated these mentioned and other DEM models and experiences into their environmental and development planning process and products. In collaboration with invited stakeholders there were prepared and approved official environmental communication planning documents as separate sector or discipline of the municipality development planning. This is to be recognized as direct MESD development facilitation since requiring regular design and implementation of environmental and sustainability information and education, participation and behaviour change activities in the municipality everyday practice.

4.6. Sustainable Development Demonstration Case

People from the local municipalities often still suffer also from the very sceptical attitude to everything new and slowly picking up new ideas and the main challenge is to change the attitude of the people with the methods of involving them in the communication process and in the decision-making. Besides main Regional Agenda 21 (as SDAP local practice) process development (within EU Life project “Green Livonian Coastal Region 21” realized in North Kurzeme region 2000–2004) particularly elaborating existing and eventual conflict resolution and wide partnership and

cooperation building there were also designed and implemented sustainable development DEMO projects as the first case in Latvia for ongoing wide and long term positive examples/experiences dissemination and also municipal training development, particularly ESD (Ernsteins R., 2003a, 2005a).

Lets mention only some and first - local SDAP planning and process management demo-projects package as partnership practice and public participation based sustainable coastal region development process - the case study (Ernsteins R., 2003a, 2006c) results have permitted us to conclude, that a combined version of all four main conventional local SD process approaches, being here tested separately and complementary (however with different degrees of quality fulfilment and later continuation perspective) as the fifth SD process development approach, namely, facilitation as structural network approach, could be recommended for further dissemination in Latvia. Components of this coherent whole approach were developed as a kind of regional sustainable development action program (structural network):

- conflict resolution and partnership practice as an overall framework,
- round table forum and public participation as a bottom-up process,
- council for sustainable development of region as a top-down process for collaborative and integrative decision planning,
- regional *Agenda 21* centre as an intermediary facilitation and partnership coordination,
- rural communication and information network as well as regional sustainable development implementation demonstration projects etc as an instrumental integration and sectorial development.

These elements of the coherent whole were seen also as both the main tasks and outcomes of the LIFE project. This applied research/project hypothesis has been appropriately demonstrated during project execution and purposely verified, however still wider demonstration and practice dissemination should have been done as real sustainability activities first time taking place in regional practice were challenged by some decision making bodies/personalities of this North Kurzeme coastal region and full scale project outputs further developments were hindered even the number of, particularly, non-formal and self-initiated activities, have got real continuation up to now.

Municipal demo-projects package - open public competition for the best sustainable development demonstration projects (four sites) to be chosen and developed in the four main fields of Agenda 21 - nature environment, social, economic and culture environments. Municipal demonstration projects were elaborated, according to the criteria worked out and taking into account results of public participatory seminars and public survey results, also after discussions and results of Round Table forum based on methodological study results by DEM. Basic principles of the sustainable development were taken as sustainable development demonstration criteria, which proved to be enough difficult to implement, but very good toll to test and use for ESD, e.g projects should have been developed as (Ensteins R., 2005a):

- environment friendly, incl. economy of the resources, choice of the best available technologies etc.,
- economically profitable – local resources must be used in effective way,
- socially equitable – the needs and interests of the local inhabitants must be respected at first as well as different social and professional groups etc.
- culture heritage safeguarding – culture traditions, including mental heritage must be investigated, used and renewed for the local development.

Besides the demonstration character (also as example of experience learning) each demo-project must be innovative and must contribute to the very local (local site) development in the meantime and favor the development of local/municipal territory and society in the future. Also there was requirement to keep sustainable not only the any content work (within economical, cultural, educational, social and environmental field as particular sectors and their interlinking) of demo-project, but also merely the whole infrastructure/supporting system of the demo-territory/objects.

Environmental and coastal sustainable development benefits as well as local drawbacks have been seen in every implemented demo-project unfortunately, either in some detail or in the whole application too. For the future of such DEMO developments and alike is to be recommended not only to be realized as separate innovative demonstration projects, but they shall be seen and evaluated as complementary sustainability elements package for the both local municipality SD and ESD practice.

Discussion and conclusions. SDAP process further development in Latvia and, subsequently, also municipal education for sustainable development has been requiring besides traditional also innovative approaches and instruments to be elaborated and applied. Basic preconditions (besides regular resources necessary) are to be developed – comprehensive applications of environmental communication model as incremental multi-component cycle and holistic stakeholder process within environmental management and sustainable development and education practice proves requirement for sustainability communication system thinking and related self-practice experience development as principal and complimentary component (ErnsteinsR.,2006b,c). Exactly, various municipal SD cases do prove, that municipal SDAP “bottom-up” participatory planning process creates and can sustain comprehensive MESD at the very local self-governance level. Governmental activities e.g. National Environmental Communication and Education Strategy and Program, as well as related municipal level activities (e.g. environmental communication plans or chapters in municipal environmental and/or development planning like in Liepaja, Cesis, Livani) as top-down support framework approach are to be made together for coherent whole with various regional/local self-experience development activities as bottom-up facilitation approach.

Expanding realization of university studies (as R&D) curriculum locally at and via municipalities and using all eventual tertiary studies interdisciplinary and interactive elements, which are to integrated wherever possible, appears to be generally necessary and then required by both parties and subsequently could be recognised, that university-municipality partnerships are seen as the important driving force behind enhancement of ESD and SD process itself in Latvia.

Approaches formulated and several case examples described above and various more detailed long term experiences gathered (DEM selected bibliography list) in municipal training/education on environment and sustainability management and also on ESD application cases itself, do allow to formulate some issues for further discussion and elaboration (full list available at Ernsteins R., 2005b) for both environmental management training/education and sustainable development/LA21 training/education.

Main approaches to be mentioned are as following. Education/training should be planned and realized for close interlinking and mandatory integration with territorial

/regional development requirements / interests, and, particularly, with emphasizing, facilitating and spin-off developing of LA21 etc. action programs and sustainable development concept in general, as well as, especially, prepared taking into account local traditions/background in general terminology (titles etc.) and specialized marketing. Also it should be targeted very precise towards following main municipal target groups - politicians and elected municipal councilors; senior specialists, especially executive directors and planners as well as coordinators and administrators of municipal associations; environmental specialists from municipalities and regional environmental boards; municipal employees; municipal interest groups e.g. NGOs, entrepreneurs, media, education, culture and health institutions, etc.; teachers and students; specialized municipal interest groups (land and forest owners, renters of municipal services, etc.); general public (youth, women and retired persons, etc.).

Basic principles and approaches designed for interdisciplinary and interactive environmental management/governance training/education could be almost directly transferred for MESD case, e.g. :

- complexity and wholity of spectrum for environmental/sustainability management content, particularly nature environment and social environment interaction,
- interlinking of biotic and a biotic together with anthropological social-economic and communicational structures,
- complimentarily of state/public and municipal, household and corporate, as well as regional and international environmental/sustainability management dimensions,
- functionality of strategic/policy and planning, programming and projecting (4P) levels of environmental/sustainability management,
- disciplinary and integrated environmental/sustainability management realizations,
- necessity of environmental/sustainability awareness development of specialists and public through environmental/sustainability communication - information, education, participation and environmentally/sustainability friendly behavior,

- applicability of monitoring, evaluation, planning and decision making realization functions of environmental/sustainability management.

ESD as from experiences with sustainable development management as well as environmental management development continuously requires: encouraging dialogue; creating mutual agreement among all process stakeholders; ensuring formal/informal cooperation; facilitating everyday practice change; disciplinary-sectoral approaches as complementary to instrumental ones respond. Finally, of course, it should be summarised, that all conclusions above as mentioned on education/training approaches/principle, shall be considered as coherent whole and realised into practice when approaching new training developments.

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5. Environmental Management and Municipal Development Process

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Several municipalities in Lavia – Cēsis (2005) and Liepāja (2009) towns and Līvāni (2008) municipality – have been adapting and integrating the collaboration communication model into the practice of environmental and development planning. In collaboration with invited local stakeholders, both environmental policy and environmental communication policy documents have been prepared and approved officially, further leading to or being incorporated into municipal development planning. A number of environmental communication integration approaches and instruments related to all four steps of environmental governance process have been studied and compiled into the basic tool-set, as well as was elaborated, discussed in practice and further proposed for a wider municipal application. The main complementary work directions required for environmental management integration into municipal development processes have also been elaborated, subsequently stressing the imperative role of collaboration communication.

Municipal environmental policy planning and implementation process and products have occasionally been studied in Latvia and, unfortunately, hardly any stakeholder discussions take place. Even after the approval of the quite innovative and participatory environmental governance-oriented National Environmental Protection Law in 2006, there is no requirement to produce municipal environmental policy plans/programmes. During the past decade, research and development projects have been ongoing at the University of Latvia Department of Environmental Management (DEM) on designing concepts, theories and practice applications of environmental communication, being understood as complementary integration of environmental information and education, participation and environmentally friendly behaviour, also known as the action oriented collaboration communication model (Ernšteins 2003). The article summarizes a series of case study research results carried out over the past several years as well as specific DEM experience based on the results of various projects,

including the application of additional document studies, interviews and surveys. More detailed studies have been carried out for the four main collaboration communication success stories in Latvian municipalities – Liepaja, Ventspils, Līvāni and Cēsis, being directly involved into DEM collaboration research work or via student field studies and master thesis research.

Environmental policy planning in Latvian municipalities can be said to genuinely have emerged (Ernsteins, Kudrenickis 1998, Lagzdina, Ernsteins 2009) in mid-1990s as a response towards degradation of the environment during the previous regime and as a result of the Local Agenda 21 processes supported by the Baltic Local Agenda 21 (BLA21F) forum and other international partnerships, networks and projects as well as via Environment for Europe process, approaching EU requirements and establishing and step-wise extending Latvia's NEAPs. Latvian municipalities have undergone all those stages, but have unfortunately failed to develop strong, politically supported and participatory processes mainly due to centralized environmental policy implementation, limited local capacity and lack of democracy traditions. As regards institutional capacity, only 11 municipalities in Latvia (Lagzdina, Ernsteins 2009) have their environmental specialist position and only 4 have environmental departments with just a few specialists (except capital city Riga).

As a result, less than 5 % of local governments have their own environmental policy plans, and this is mainly due to personal motivation and interest of municipal environmental specialists, to a lesser extent also as a result of former project experiences with bilateral partners from Western countries (Lagzdina, Ernsteins 2009). In the course of more than a decade, policy plans, initially focussing on end-of-pipe solutions, have gone through through qualitative change. Larger city municipalities Liepaja, Ventspils, Jūrmala, Riga have developed and renewed their plans several times. Ventspils city, for example, has its 3rd version of the Environmental Policy Plan in place for 2001-2010. The EU Urban Thematic Strategy opened up new opportunities for environmental policy planning in Latvian municipalities with stronger integration and a more strategic approach, facilitating a shift of emphasis from disciplinary to integrated planning.

Initially, environmental policy instruments were often limited to administrative and financial instruments with insufficient attention to communication tools. Further on,

the common phenomena to be seen in the municipal planning are increased recognition of communication as a policy instrument, its more integrated application not only in sectoral policies (e.g. waste management, urban air protection, nature protection to be mentioned as the most typical ones), but as a general approach in municipal environmental governance. Another characteristic is the extension of applied communication cycle components (and/or tools) from a purely informative component of communication (to meet access rights to environmental information) towards active public involvement in decision-making, and promotion of behaviour changes by environmentally friendly actions (waste sorting, clean-up campaigns etc.). A particular achievement that deserves to be mentioned is the renewed version of the Environmental Action Programme for Liepaja City for the period 2009-2014, which includes a new chapter placed as chapter number one due to its integrative character: Environmental Communication. The methodological approach was based on the collaboration communication model (Ernsteins 2003). True, different elements of environmental communication and their combinations can indeed be traced widely in various development documents and action programmes of local authorities, but the ultimate target, however still shall be advancement towards the creation of interaction synergy.

5.1. Environmental Communication Integration into Municipal Management

Environmental communication is an essential environmental management instrument along with the legal, economic, planning, administrative and infrastructural instruments in preventing environmental degradation, in ensuring sustainability and in achieving a change in understanding, attitude and behaviour. It is an efficient instrument in search for sustainable solutions and in environmental policy planning and implementation, and it has an enormous potential for targeting key environmental objectives: building environmental awareness, sustainable lifestyles and environmental co-operation among all parties involved – which is a well-acknowledged fact in the developed world near and far (Day, Monroe 2000, Daniels 2001, Beierle 2002 etc).

Environmental communication is first and foremost an interdisciplinary science as it stems and derives its theories from a number of different sciences, i.e., communication

science, sociology, social psychology, cultural anthropology and others. When looking at the environmental communication approaches applied by key environmental communication scholars and research institutes in research and practice, theories and models in other sciences such as the ones mentioned above can often be found. Environmental communication experts (Cox, 2010, Corbett, 2006 etc), coming often as they do, from the field of communication, tend to focus on the specific sub-categories of environmental science such as environmental rhetoric and discourse, environmental mediation, environmental journalism, and campaigning rather than on communication as a complex system of elements interacting within a specific territory, e.g., a local municipality.

In search of a holistic, comprehensive and systemic approach towards environmental communication that would possess the greatest potential of achieving a change in understanding, attitude, motivation and behaviour on the way to sustainability, the Department of Environmental Management (DEM) at the University of Latvia Faculty of Economics and Management came up with a new environmental communication model - Collaboration Communication Model (Ernsteins 2002, 2003), which has to this day served as a basis for a number of environmental communication case studies in Latvian local governments (Cesis – 2005, Liepaja, Roja - 2007, Ventspils - 2009 – among others) carried out as co-operation projects between selected local governments and the DEM. Over the course of research projects and later on different municipal planning processes, we can recognize that environmental communication is already growing into a separate vigorous environmental sector along with the traditional environmental management sectors such as waste management etc.

The developed model can be considered as comprehensive systemic approach towards environmental communication as it pools into a coherent system all of the key elements (or dimensions) that form a joint communicative environment - environmental information, environmental education, public participation and environmentally friendly behaviour. Practically no such pooling based on the complementarity principle has been offered by other environmental communication models (Cox 2010, Ernsteins 2003, 2008b, Michelsen 2007). Thus, it aims at illuminating the interaction of the four notions (often disengaged both in theory and municipal practice) and discarding the traditional

communication approach – information flow-focussed approach. The model also insists that the potential of the combined force of these four communication dimensions can only be utilised to the full extent through ensuring co-operation and partnership among all target (stakeholder) groups involved. Thus, this model is based on the imperative of two complementarities: the complementarity of the four environmental communication dimensions, and the complementarity of all target groups working in partnership.

As the first step, the environmental communication model was applied in Latvia in the first National Environmental Communication and Education Strategy (2000), which has unfortunately failed to be widely implemented due to limited capacities and lack of priorities at the Ministry of the Environment. Subsequently at the DEM, the model was adopted in collaboration research projects in the local governments of Latvia, applying it as a methodological research framework and focussing on the above four dimensions and their interrelations in and among all key target groups. In some studies, an additional methodological approach was applied by which environmental communication was studied in four distinct social environments (domestic, professional, study, public). The environmental communication management research projects of the University's Environmental Management Department analysed include coastal municipalities such as: Ainaži, Salacgrīva and Ziemeļvidzeme Biosphere Reserve; Kolka, Dundaga and Slītere National Park; Lapmežciems and Ķemeru National Park; Liepāja city; Roja parish; Carnikava parish, Pāvilosta parish, Ventspils city, etc.

The aim of the collaboration research projects (apart from situation assessment and problem identification) was twofold: first, to produce a real applicable end-product in the form of a locally tailored environmental communication (or in some cases – environmental co-operation) policy plan and/or action programme proposal, and second – to give an initial boost to the further local environmental communication process development, broaden the outlook of the target groups so as to reveal the unacknowledged vast potential of environmental communication in building local environmental awareness, facilitating participation, expanding the usual confined frameworks of co-operation, breaking the traditional perceptions and stimulating new innovative approaches. In all of these studies this twofold aim can be said to have been achieved, however to varying degrees and, of course, depending on the readiness of local

municipality and/or other target groups. Even more so – in a number of local governments, the proposed communication and collaboration model has subsequently been adopted and integrated into the municipal environmental policy planning process. This has been implemented either through a disciplinary approach – namely, by including in the environmental policy plan a separate chapter on environmental communication (Cesis, Liepaja, Ogre), or through integrating environmental communication aspects into the environmental policy plan and/or development programme (Livani).

The joint collaboration research work has in many local governments resulted in local environmental communication programming guidelines, local policy planning also being based on the key principles of quality management cycle, transforming it into the 4P environmental management (incl. communication) cycle model: problem analysis (1P); policy definition (2P); policy planning (3P); programming (4P). The model contains the following key components: policy values and intentions, aim and principles; planning preconditions and resource basis; objectives, instruments and indicators; action programme, its implementation and review. The collaboration communication model has received positive feedback from the local governments where it has become part of their municipal planning mechanism. As acknowledged by the environmental experts of these local governments, the four-dimensional environmental communication model has given an impetus towards building new partnerships, finding creative solutions, and broadening the scope of activities. Integration of environmental communication into the planning documents, being a political commitment, has facilitated the implementation of these issues into practice and has helped bring them to the forefront when designing specific action programmes and investment projects.

Environmental communication is to be seen as multi-stakeholder understanding and co-operation enhancement process, e.g. by complementarily involving all four components, but all in all - by considering and applying values, intentions and opinions of all key target groups, i.e. local inhabitants, municipal and state institutions, NGOs and the media, businesses, etc. (Ernsteins 2003, 2008b). This could be called collaboration and action-oriented communication model – the model of incremental environmental communication cycle – subsequently demonstrating the linkage between environmental communication components or the cyclic basic steps of the communication process and

the pedagogical/practical results that within the particular cycle ensure applied and concrete practical case-oriented environmental awareness development, but within the multi-cycle integration - the process of repeated and supplementary self-experience development, which facilitates general environmental awareness enhancement (Ernststeins, 2006a, 2006b, 2008b).

Environmental communication could be realized through a disciplinary approach as an environmental management sector, but it should also be integrated into all decision-making levels, fields/sectors and processes. This all has been considered when launching case studies research and collaboration research work at local municipalities aiming to produce proposals for building an environmental communication management system for municipalities and regions based on the aforementioned environmental communication model. The main statements for environmental communication development status at the municipalities as well as nationwide have already at the end of the past century been defined in the National Environmental Communication and Education Strategy (2000) as follows:

- insufficiently coordinated circulation and complicated availability of environmental information, its inconsistency with the needs of different target groups,
- low level of public education and understanding about the importance of environmental protection and environmental problem-solving possibilities,
- insufficient activity of community and other target groups, as well as the lack of mechanisms for participation in decision-making,
- insufficient preconditions for an environmentally friendly lifestyle and action of community and different target groups.

All the research case studies carried out were following those four environmental communication components and their interaction in local municipalities and included interviews with representatives from all key local target groups, surveys, observations, studies of local planning documents. To sum up, the environmental communication case research studies in the Latvian local governments have served as pilot research into the potential and possibilities afforded by the proposed four-dimensional (environmental information - environmental education - public participation - environmentally friendly

behaviour) environmental communication model. This research has yielded positive results as to the model's practical applicability in environmental communication process initiation and facilitation, stimulation of target group/stakeholder self-activation for co-operation, dialogue and increased participation in building a sustainable local community. The integration of the proposed environmental communication model into municipal documents can be considered a further achievement towards the effective application of this valuable instrument on the local level and possibly even beyond. In order to facilitate its full-fledged and comprehensive planning and implementation, environmental communication could be developed not only as an instrument but already as a separate sector in environmental management.

After a comprehensive study of over 20 municipalities in Latvia and realization of the full-scale case study research methodology at the local urban and rural municipalities of Cesis, Carnikava, Liepaja, Roja, Ventspils, Dundaga and Saulkrasti, the basic environmental communication integration tool-set being most successful already or researched and acknowledged by municipalities (as well as also representing all four steps of public policy cycle) can be said to include the following tools: Environmental consultative board; environmental policy declaration; planning documents; environmental licensing system; sustainability indicators.

Municipal environmental consultative board (particularly, Cesis municipality example) as an environmental communication instrument - apart from its consultative and other formal functions - may have a number of other indirect positive effects, as it serves to:

- ensure and facilitate public participation in studies /planning/ decision-making;
- offer a framework for co-operation for stakeholders and other interested parties;
- perform a mediatory function as an opinion/position co-ordination format
- ensure preventive addressing of emerging/ potential conflicts and risks in development planning;
- unite/ activate/ motivate local community towards action (empowerment approach);

Municipal environmental declaration as an environmental communication instrument: - by adopting an environmental declaration, a municipality openly declares (communicates to the local community) its commitments in the environmental sector or on specific environmental issues, thereby:

- facilitating internal environmental communication in municipality administrative structures (clearly defined values, priorities, position);
- developing external environmental communication, i.e., communication with the public, bringing to the forefront its commitment to reaching certain objectives for the good of the local community;
- developing a positive social marketing – municipal image-building;
- stimulating local environmental awareness;
- fostering responsible local entrepreneurship;

Environmental declarations have been adopted in the municipalities of Livani, Jelgava, Daugavpils, Preili, etc. That of Livani, - Declaration of Livani District Municipal Environmental Policy and Integrated Environmental Collaboration, adopted within integrated development planning process but separately elaborated and approved by the municipality as a collaboration communication instrument-document, stands out in particular.

Environmental communication integration into municipal development planning as an environmental communication instrument - there are a number of ways to integrate environmental communication into municipal development planning, e.g.:

- by incorporating environmental communication aims/elements into the local environmental policy plan or action programme (e.g. Cesis municipality);
- by incorporating environmental communication aspects into the broader local development programme (e.g. Livani municipality);
- by defining environmental communication as a separate environmental management sector and developing a separate chapter in the environmental action programme (e.g. Liepaja municipality);
- by defining environmental communication as one of the environmental policy instruments (e.g. Ogre municipality);

Basically, three key approaches can be defined as to how environmental communication may be integrated into local planning and environmental management:

- disciplinary approach – environmental communication as a separate environmental management sector;
- integrated approach – environmental communication aspects directly integrated into other environmental management sectors;
- mixed approach – a separate environmental communication strategy developed and then integrated into the overall local planning etc.

Environmental communication integration into municipal development planning serves to:

- ensure strategic planning of environmental communication as an environmental policy instrument;
- build a closer interaction between environmental management and public management (environmental awareness-building, knowledge-building, empowerment, responsible behaviour/lifestyle etc.);
- promote co-operation within and among municipal administrative structures/departments, and co-operation with public institutions, NGOs, other actors;
- a separate environmental communication programme systematises required measures so as to further successfully integrate them into every environmental management sector and the overall community development planning;
- ensure a political basis for working with communication issues in the environmental sector, promote awareness of the importance of communication management, and ensure systemic planning when drafting action programmes and investment projects.;

Municipal environmental licensing system as an environmental communication instrument is a unique measure in Latvia as it is a voluntary municipal initiative currently found only in the port city of Ventspils and aimed at ensuring high environmental standards in the local entrepreneurship. A municipal environmental licensing system is a valuable environmental communication instrument as it:

- ensures participation of all stakeholders and other local actors (municipality administration- businesses- public institutions – residents -the media);
- ensures communication with the local residents, dissemination of information, public discussions etc.;
- promotes responsible entrepreneurship, introduction of environmental management systems in businesses;

Sustainability indicators as an environmental communication instrument are to be seen at least for the realization of the following communicative functions:

- informative function – the local community is informed of what indicates sustainability and what the key variables affecting the whole system or the specific sectors are;
- educational function – awareness-raising on sustainable development principles, including sustainable lifestyle;
- action motivation – objectives for action defined, etc.

5.2. Livani Municipality Case: Environment and Communication Integration

Livani district is situated in the south-eastern part of Latvia – the Latgale region. After the last administrative reform of district territories in Latvia (2008), Livani district has around 14500 inhabitants and comprises the town of Livani and Rožupe, Turku, Jersika, Sutri and Rudzati villages. The solutions of Latgale region spatial plan for Livani city are focused on the functional and compositional arrangement of the city, emphasizing the status of the regional development centre, therefore the general environmental management is of great significance both in short and long term development processes. Although the Livani district municipality has not produced a specific environmental policy and environmental management system, it invests effort in working towards sustainable development of its environment, focusing not only on environmental technologies and infrastructure, but also on human resource and capacity development for environmental management in Livani district territory. Targeted promotion of cycling transport and bike tourism is one of district's development directions. The other sustainable development focus area is to increase energy efficiency

in both public and private sector (mainly in lighting and heat energy production and use). Having evaluated Livani district's development prospects, existing resources, additional services and infrastructure provided by the surrounding territories, recognizing Livani district's size, geographic location, social and economic environment in the regional and national contexts, the key pillars for further development of Livani district are the development of:

- innovative entrepreneurship (including creative industries),
- niche tourism (cultural heritage, culture knowledge, active and nature tourism)
- quality and sustainability of the living environment (which is the general basis for the success of any other activities and measures).

An important step in order to facilitate environment and communication integration into development planning by the municipality specialists has been to evaluate environmental management human resource capacity in Livani district municipality, to identify the municipality's role in human resource development, and to elaborate Guidelines for integrated environmental collaboration in a, so called, self-active municipality, applying innovative solutions as much as possible. A model of integrated environmental collaboration in a self-active municipality has been created. Based on this model, recommendations for environmental management human resource development in Livani district have been proposed. The identified four target groups, mutually cooperating horizontally and vertically, form an integrated environmental cooperation network, which enables even small municipalities lacking their own human resources to plan the attraction of external services, develop cooperation among stakeholders, increase environmental awareness and environmentally friendly behaviour among the public, thereby ensuring an adequate joint environmental management human resource capacity and sustainable development in the territory.

The results of this research affirm that a local municipality is able to facilitate the development of environmental management human resources if the required analysis of existing situation can be carried out in a proper and participatory manner, and if the model for environmental management human resource development is based on an integrative and innovative approach clearly identifying the main target groups that form an integrated environmental cooperation network. Research results may be used by other

local municipalities similar in size to Livani district. The human resource development recommendations provided in the integrated environmental collaboration programme for a self-active municipality facilitate cross-department collaboration of municipality employees, their cooperation with the local society, with Livani-born persons now living outside it, with state institutions, NGOs, and other public and private partners, thus ensuring a joint collective human resource capacity for environmental management even in small municipalities which are ready to show self-activity and self-initiative.

There are several planning documents in force for Livani district development comprising environmental aspects. In 2008, Livani district Integrated Development Programme 2008-2014 was elaborated. It is the main guiding document for development processes in the municipality. The environmental sector priorities have been integrated in the programme starting from the definition of the vision and throughout all three programme priorities. The vision of Livani district 2008 – 2014 says, “Livani district – the district of traditional heritage, modern technologies, cyclists and ‘green’ news”. To reach that, an integrated approach in Livani district integrated development programme (2008-2014) is being used through the spatial dimension, time dimension and thematic dimension. As a result, coordination of interests among national, regional and local level administrations and all stakeholders (entrepreneurs, NGOs, general public, etc.) is reached.

Spatial dimension means awareness of the plusses and minuses provided by the geographical (physical) location of Livani district. Time dimension expresses itself in consecutiveness of planning documents, programmes, studies, public surveys, etc., as well as concrete projects set out in the Investment Plan and to be realized (partly or fully) in the relevant time-frame of 2008–2014. Thematic dimension shows the priorities of Livani district integrated development, i.e. Priority 1: Promotion of innovative entrepreneurship (well-arranged and coordinated innovative entrepreneurship support system, development of innovative entrepreneurship support infrastructure, and provision of necessary human resources for innovative entrepreneurship support); Priority 2: Sustainable development and quality of living environment (improvement of infrastructure and service accessibility and quality, well-arranged living environment – social, economic and nature environment, and provision of necessary human resources

for sustainable development and quality of the living environment); Priority 3: Tourism development (ensuring sustainability of culture history and nature resources while making use of them in culture, nature and active tourism development, selection and development of innovative tourism niches and services, including industrial history tourism, nature and cycling tourism, and provision of required human resources for quality cultural history and knowledge, nature and active tourism development). Apart from the main priorities, there are 2 horizontal priorities permeating through the entire programme, i.e. human resource development, and education and technologies.

Some of Investment Plan projects set out in the Livani district Integrated Development Programme 2008-2014 are: Project 3.4. Development of safe cycling infrastructure and its integration in Livani district's transport system; Project 6.1. Development of a sustainable waste management system; Project 6.3. Increase of energy efficiency of multi-storey block buildings"; Project 9.1. Implementation of GIS and resource e-management system in Livani municipality; Project 10.1. Increase of efficiency of municipality's services through creation of new departments (educational department and environmental department); Project 10.3. Improvement of environmental communication and creation of environmental management system for Livani municipality. Some of the projects have been successfully commenced; others are yet to be launched.

In addition to the main guiding document for development processes in the municipality, there are several planning documents elaborated specifically for the environmental sector. One of the supportive sectoral documents is Vision for Livani District Environmental Sector Development 2008-2014. The main priorities are biodiversity and nature protection, natural resource management and control of pollution, environmental health management, environmental control and monitoring, as well as environmental communication. The features mentioned in the vision are environmental communication, cooperation and collaboration, joint action (in spite of several difficulties, but also owing to very positive earlier experience), interactive "self-experience" (municipality's administration has participated in sustainability-related projects and activities since 1999, and only now the first real results can be seen), development and use of complementary resources and instruments, attractive and

innovative methods, human resource capacity as the main precondition for planning and implementation of sustainable development activities.

The second supportive sectoral document is the Declaration of Livani District Municipal Environmental Policy and Integrated Environmental Collaboration reflecting the political will and the readiness of municipality specialists to work environmentally friendly in the direction of sustainability. The main points in the Declaration focus on e.g. the cooperation on the local, regional, national and trans-national levels, environmental communication (information, education, participation and environmentally friendly behaviour), attraction of specialists and experts for solving specific environmental issues, revision of results achieved.

Other supportive sectoral documents are the Environmental Review performed in the context of the Integrated Development Programme 2008-2014, and the Environmental Review performed in the context of the municipality's Territorial Spatial Plan 2006–2018. All these documents form the framework of municipal sectoral environmental policy to be implemented during the further implementation of environmental management. The integrated environmental collaboration network functioning in the Livani municipality includes cooperation among municipality administration and 1) local society, 2) locally born persons now living outside the municipality, 3) state institutions, NGOs, external experts and other public and private partners. As a result, joint collective human resource capacity for environmental management can be reached even in a small municipality.

5.3. Liepaja Municipality Case: Disciplinary Approach to Communication

Liepaja city is located on the Baltic Sea coast, south-western edge of Latvia (Kurzeme region) and has around 85000 inhabitants. Utilizing all research based on environmental communication guideline materials prepared by University of Latvia DEM, also Liepaja University public surveys and environmental management practice experience gathered during 2001-2008 and taking account of the realization of municipal Environmental action program, the structure and contents of the new chapter “Environmental Communication” have been elaborated (Stals 2010). This chapter has

been included in the revised and officially approved Liepaja City Environmental Action Programme 2009–2014 as the first environmental management thematic Chapter No.1. The environmental communication disciplinary or sector approach applied in the Action Programme ensures its equal application in solving municipal environmental policy issues parallel and along with other traditional environmental management sectors such as water and waste management, etc. The structure and contents of the chapter have been drafted based on the environmental communication collaboration model (Ernsteins 2003), which includes four complementary, cyclic elements or components: environmental information, environmental education, public participation and environmentally friendly behaviour.

In order to further apply and develop in practice the environmental communication disciplinary sector approved in the Liepaja City Environmental Action Programme as an opportunity to facilitate sustainable development and improve environmental management, and in order to integrate it into other municipal management processes, four complementary and integrated key action directions (also 40 subordinated activities) aimed at the further development of the municipal environmental communication sector were elaborated in detail. The four key action directions may be used in other Latvian municipalities (e.g. townships), and these are also recognized as prerequisites for the successful development of environmental communication management in a local government.

Both disciplinary prerequisite dimension as well as three important integrative prerequisite dimensions are to be recognized (Stals 2010), e.g.:

1. development of environmental communication as a separate environmental management sector and mutual integration of its components. This dimension includes enhanced and integrated planning of environmental information, environmental education, public participation and environmentally friendly behaviour, efficient resource utilisation, experience analysis, extension and popularisation;
2. environmental communication integration in co-operation with target groups, what means strengthening of a versatile, active, continuous municipal internal and external communication and participation practice and promotion of target

group internal communication, ensuring conditions that stimulate their self-initiative and motivation for co-operation in solving environmental issues;

3. environmental communication integration in every municipal environmental sector, which requires its complementary and systemic application aAlong with other environmental management instruments, integrating it into every environmental management sector separately by ensuring its inclusion into planning and drafting of legal regulations and horizontal mutual sectoral interaction;
4. systemic integration of environmental communication into municipal governance and, in particular, into planning and decision-making processes, internal administrative documents and the information circulation system, personnel training and capacity-building, co-operation and its assessment/supervision instruments required for performing municipal functions and voluntary initiatives on both horizontal and vertical management levels.

Based on research results (Stals 2010) and with the aim to ensure the implementation and development of a co-ordinated, planned and systemic environmental policy, Environmental Communication Management Guidelines for Liepaja Municipality, based on the above action directions, have been drafted. The Guidelines define the environmental communication policy objective, implementation principles, environmental communication target groups, sets out the key action directions and activities, focussing in particular on environmental communication instruments and indicators, which aid better integration or implementation of the four environmental communication components into municipal collaboration communication practice – without which the sustainable development objectives as defined in the international, national and local strategic and sectoral planning documents are not attainable.

To ensure that the Guidelines elaborated could be implemented in the everyday planning of municipal environmental management and action practice and thereby facilitate environmental policy and sustainable development processes, attention should in future be devoted to the establishment of various specific instructions, procedures and mechanisms, which incorporate both academic and theoretical knowledge, opportunities

afforded by the current legislative framework, best practice and the experience of environmental and communication professionals.

5.4. Ventspils Municipality Case: Environmental Policy Integration

This overview article has been intended not only to illustrate a number of case study research activities in the most successful local municipalities of Latvia in the context of environmental management and environmental communication management and gather best practice cases from other regions-municipalities, but also to pool the many diverse University of Latvia DEM-conducted research conclusions and, in particular, the elaborated development directions, in order to facilitate discussion on the common understanding and specific successful contributions, of the development of municipal environmental communication concepts/theories and their application in practice. More detailed study has been performed on the four main success stories in Latvian municipalities – Liepaja, Ventspils, Livani and Cesis.

Based on University of Latvia and municipality collaboration project (incl. field studies), Cesis town (2005) has approved the Environmental Policy Plan and Action Programme - being for the first time elaborated by applying a full scale complementary assessment of three main sustainability capitals: two-way integration of environmental capital into social and economic ones and, especially, a return integration as well has been achieved. The innovative chapter on Man and Social Environment has also been drafted and stands as Chapter 1, including a sub-chapter on public education, information and participation also for the first time (compare to the former solely instrumental approach used). It should also be added that the municipality still lacks an environmental management division or relevant formal post; instead, however, a participatory governance instrument - Environmental Consultative Board has been very actively employed.

Some of the main difficulties in the implementation of environmental communication and even of an integrated development programme (e.g. in the case of Livani municipality), are certain incompetence and also inactivity of some municipality employees, in particular, at municipal maintenance service agencies and infrastructure

due to the lack of modern-day training for the long-employed staff used to old-time working practices and unwilling to adopt any innovations. Nevertheless, there are several preconditions for the successful implementation of the programme goals, which are mostly connected with environmental human resource capacity development, i.e. the immense role of competence and attitude on the part of municipality's leaders, administration and specialists, structural and spectral monitoring (regular evaluation of environmental management human resource capacity in a municipality, learning from others not to 'reinvent the bicycle'); the need for a separate environmental human resource development programme with clearly identified target groups (incl. identifying the municipality's specific role in the processes); integrated environmental cooperation of municipal administration employees, cross-sectoral, cross-departmental horizontal and vertical municipal collaboration; use of complementary resources and instruments, traditional as well as informal, attractive, innovative methods and technologies; and municipality's self-activity and self-initiative.

The results of the research in the Livani municipality and other territories does attest to the ability of a local municipality (even having no assigned specific environmental division/specialists for it) to facilitate the development of environmental management human resources, based on the integrative and innovative approach and clearly identifying the main target groups that form an integrated environmental collaboration network. Livani example also provides a very illustrative case of developing a combined (mixed) environmental management at the municipality level apart from the officially requested integration approach, with preparation of the integrative development planning process and appropriate document at the end; supportive environmental sector documents (disciplinary approach) have been initiated, elaborated and formally approved, such as the Vision for Livani District Environmental Sector Development for 2008-2014 and also, in particular, the Declaration of Livani District Municipal Environmental Policy and Integrated Environmental Collaboration.

Ventspils city municipality has been actively working on disciplinary environmental policy (strongly natural science-oriented, however) already since 1992 and does now have its third policy plan approved. The understanding of the importance of adopting a broader approach has been gradually growing, and towards environmental

communication as well (Zīlniece, Ernsteins, Benders 2009) through developing a number of diverse environmental communication activities, which are not, however, interconnected and mutually reinforcing. An environmental communication plan as a complementary integrative component for the Environmental Policy Plan, but, especially, incorporating through the integrative approach the required environmental communication content and methods into the strategic and administrative planning process and documentation, is to be seen as a prompt solution if taking into account existing experience of both the formal environmental assessment process and the involvement of various target groups.

Let us introduce the elaborated proposals (Zīlniece, Ernsteins, Benders 2009) on the prerequisites for further development of the environmental policy not only in Ventspils but also further afield. Municipal environmental policy development research into target group opinions and assessing environmental policy development as a process, including all environmental policy development stages from problem analysis to action programming allows for conclusions on Ventspils environmental policy sustainable development prerequisites and development directions, whose implementation requires most attention. In individual cases, recommendations have been elaborated down to specific project proposals, thereby providing a basis for drafting a detailed action programme for Ventspils, but three plus three main work directions are to be seen here:

- 1- Ensure collaboration (communication) capacity for environmental management development as a necessity for all target group (incl. governance) development and collaboration (Kursinska, Zīlniece, Ernsteins 2009, 2010).
 - Build a planned and systematic municipal environmental communication management: integrate environmental communication into municipal strategic and planning documents/ binding regulations, ensure their mutual co-ordination and integration into all municipal sectors;
 - Stimulate target group internal co-operation, mobilisation for action and active participation: to increase understanding of every target group concerning their respective contributions to the environmental policy process;

- Create a single co-operation space for information circulation and target group co-operation, integrating all municipal environmental issues into the information and education space and maintain a comprehensive and versatile thematic spectrum of environmental issues.
- 2- Ensuring governance capacity – municipality administration-led environmental management process.
- Integrated planning approach securing integration of environmental policy targets and principles into the planning and implementation process, not dismissing, however, the disciplinary environmental policy approach;
 - Ensure regular policy supervision based on cross-sectoral policy monitoring, intermediary evaluations and innovations;
 - Complementarily develop institutional and human resource capacities and management instruments.

The summary of complementary instrument audits in various municipalities shows that environmental communication is indeed an integral process where it is impossible to reach good results without complementary activities of all its components: environmental information and education, public participation and environmentally friendly behaviour (Ernsteins 2006b, Lagzdina, Ernsteins, 2009). Each next step is built on the progress of previous steps: there is no participation if no information and education is provided, there is no education, if there is no sufficient information and data. Finally, behaviour is the demonstration of informed choices and aware citizens with high standards and ethical values. Environmental communication as an integral and indispensable part of environmental policy should be properly addressed by municipal administration, allocating the needed human and financial resources for its development and implementation on a regular basis.

As described above, the authors have recognized the basic components for the environmental communication integration tool-set being already most successfully applied or acknowledged in municipal practice – and these are: environmental consultative board; environmental policy and/or communication declaration; planning documents; environmental licensing system; sustainability (and communication) indicators. These separate success stories could be seen also as already representing all four steps of the

public policy development cycle, thus providing municipalities with a comparatively easy-to-use combination of environmental communication instruments to be applied complementarily.

The research performed in Liepaja city during 2006-2007 and 2008-2010, shortly presented in the previous chapter, supports, elaborates on, specifies and supplements former research done at DEM on environmental policy and environmental communication in Ventspils, environmental management human resource and environmental communication development in Livani, and environmental communication assessments in Latvia in general and so is forming a 4-dimensional action guidelines structure, recommendations and conclusions concerning the development and management of integrative and disciplinary environmental communication in Latvian local governments in order to profoundly enhance municipal environmental management and in the meantime facilitate the integration of sustainable development practice into municipal development planning.

Finally - as it has been reconfirmed - even if now a number of new/adapted environmental communication approaches and instruments have indeed been introduced and tested already, the first step for an environmentally aware municipal development planning still is the need (particularly in cases such as integrated coastal zone management) for municipalities to recognize the role of communication in their management practices and integration of environmental communication elements in daily activities, programs, projects as well interactions with numerous stake-holders in the territory, to gradually build awareness and community competences for participatory governance. The scope of local initiatives focusing on communication are extremely diverse in forms, goals and involved target groups, but the challenge for authorities is to combine their efforts for a more synergic effect.

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6. Sustainable Coastal Development: Information and Indicator Systems Necessity

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6.1. Environmental Information Management Enhancement

Appropriate environmental information and more and more also sustainable development information are main precondition and effective instrument for sustainable coastal development (SCD) wide understanding, clear and participatory communication, and, finally, integrated and optimal management. There were performed analysis of environmental protection/management missions, strategies and tasks being under responsibility of different governmental organizations and various ministries in order to clarify environmental actors and their interactions as well as to re-assess the information reserves currently in Latvia. Latvian Environment, Geology and Meteorology Agency (Environmental Agency) as the main environmental information generator in Latvia shall be centrally placed together with the newly established interministerial Council for Cartography and Geodesy of Latvia as representative and coordination body of all related ministries aiming also to formulate and adjust state position regarding INSPIRE. Also other actors in the field have been explored and necessary information developments using questionnaires and interviews analyzed – here obviously are to be mentioned such related interest groups like municipalities, non-governmental organizations (NGO's), higher education and research.

The need for operative open access internet services have been instantly increasing as previously public access environmental information in Latvia were developed by Environmental Agency and only by using two traditional complementary sources/applications - Environmental Status Reports and lately developed National Sustainable Development Indicators report as well as web page with all related data banks available in Latvia, covering all elaborated numerical/digital and cartographical environmental information. In the preparation of these environment reports more than 30 different organizations have been regularly involved and situation has been more or less ready for enhancement of the next step – the networking process development. Besides

needs for systematization and systemic development of state monitoring system, the common strategy and innovative tools, particularly information and communication technologies (ICT), for enhancing the exchange of information and further cooperative development for appropriate decision making support has been seen as central issues in order to facilitate networking of all national environmental actors and create environmental information management system.

All important stakeholder groups generating and/or using environmental information (with special emphasis to spatial environmental information) were only partially satisfied with availability of environmental information products provided by other institutions. There are no clear legal, financial and institutional framework established in Latvia to share between major data providers and data consumers their requirements that should be incorporated in the state information systems. In similar way the available spatial databases meet only requirements of the corresponding producer disregarding interests of any other authority. For instance, the State Land Service offers the spatial data which technical specification is designed only for the internal purposes i.e. producing of topographic maps. This is the reason why public authorities must spend now their own efforts and resources to customize the spatial data produced by other organizations prior the usage for their specific tasks.

Stakeholders are interested in spatial environmental information however mainly only for illustration of different reports (producing of maps) and calculation of distances and areas. There is a need for demonstration what GIS can do for data analysis in science and decision-making. The main problems associated with spatial environmental information availability are expensiveness of information provided as well as the fact that information very often is prepared in such form that is inappropriate for other user or is not updated.

Main stakeholders in Latvia shall decide on next radical and concrete steps - the actions to establish the spatial data infrastructure - already now before legal obligations (INSPIRE directive) will be enforced. The process of sharing the responsibilities to establish the spatial data infrastructure in Latvia is really actively ongoing now e.g. the Parliament of Latvia recently accepted the amendments in the Law on State Land Service that have introduced the new task – State Land Service now is responsible for

maintaining the basic spatial databases and corresponding metadata and to establish the spatial data infrastructure in Latvia. The ministries will share their responsibilities to maintain the spatial data sets described in the Annexes of the INSPIRE directive in the nearest future. These activities would facilitate the preparatory phase before the spatial data infrastructure will be implemented.

Also the brand new e-Government developing programme for 2005-2009 points out first important steps to facilitate establishing of the national spatial data infrastructure; create or improve the reference GIS datasets; create the geo-portal; ensure the geographic information availability and accessibility in electronic form. The problems with intellectual property rights for public sector users must be addressed in this step as well. Also improvement of the national legislation must be done related to the production and use of spatial data in electronic form.

There is also other type of importance which shall be repeatedly emphasized - the education and training activities on spatial environmental information for formal (esp. higher education) and non-formal education establishments, professional and interest education etc shall be very widely and beforehand elaborated and in place. This as well as inside and outside public relations activities, public and interest groups involvement and sustainable development principles incorporation shall form backbone components for environmental information communication strategy.

6.2. GIS for Environmental Management and Territorial Planning

Spatial planning as one of the most important elements of the territory development includes in its concept the necessity for spatial information and its processing. Today it is usually implemented by such technical and information means as geographic information systems (GIS) and the role of spatial information is constantly growing, particularly for finding integrated analyzes and related solutions.

Spatial and development planning processes in municipalities of Latvia started as late as in the beginning of 1990-ties just after reestablishing of independence. Late nineties mark total transfer from the classical cartography to application of digital instruments in the whole country. Previous experience in working with CAD systems

created preconditions for introduction of such instruments in the work of the State Land Service. Instrument *MicroStation* by “Bentley” company was broadly introduced there. It was used also by consultants having their background related to the field of architecture. Whereas environmental and development planning experts entering spatial planning field mostly used ESRI *ArcView* programmes. These both GIS creation and management systems still dominate in Latvia.

Certain deficits of understanding about GIS using possibilities shall be recognized - many experts still consider it as a convenient mapping instrument often neglecting its data base capacity. This is the case particularly in the broad-scale mapping.

GIS tools as a map images creating instrument is the most widely used application of GIS in Latvia. Developed and well functioning full-capacity GIS can be found in authorities and enterprises maintaining and servicing large spatial structures: telecommunication and energy companies, state environmental management authorities and biggest forest management enterprises. Certainly, these information systems are specialized according to specific requirements of the particular field it operates for and is accessible to the limited number of internal users. Development of remote sensing cartographic services in Latvia has started quite recently. First products of this kind appeared after year 2000 – in State Forest Service and in few other enterprises as internal use services. At the end of 2004 there was still no public map service available. Also currently its number is still quite small.

First phase of municipality territory planning closes at the end of 2006. By this time all municipalities should have developed and approved basic spatial planning documents – cartographic material showing the existing and planned (permitted) use of the territory, as well as construction terms for construction and other territories. At this scale planning of the territory of the entire country and its development as well as planning regions and administration regions (NUTS3 level) and other territories with the same functional indication, as for instance coastal management, should be performed. As the illustration of spatial analyzes case there will be in the next chapter described EU Interreg project Deduce aiming to coastal sustainability assesment using complex of indicators. Territorial and development planners are prime GIS users target groups in Latvia and their needs and interests are to be specially taken into account.

Considering development of GIS instruments for environmental planning/management and development planning there are obvious need for coming change. Calculation of indicators requires different statistical data relating them to particular geographic information system. Unfortunately main statistical institution in Latvia – Central Statistical Bureau (CSB), lately does not provide data on the municipality level in they surveys, but for some parameters information has never been systematically collected or is missing at all. Regulation of collecting and reflecting of local information as well as creation and maintenance of GIS on the scale of the entire country by legislation is insufficient. It can be mentioned, that even some part of GIS professionals still consider it as a tool only for convenient creation of map images and not for analysis of the dynamics of the territory.

Also special attention should be payed to the system localization. Important parameters specific for Latvia and showing sustainable coastal development in this country should be introduced into the lists of indicators hence creating a national system of indicators, but those not applicable for Latvian conditions should be withdrawn.

6.3. Indicators Based Information Systems and Coastal Development

UN Agenda 21 (Chapter 40.4) prescribes clearly - indicators of sustainable development need to be developed to provide solid basis for decision making at all levels and to contribute to the self-regulating sustainability of integrated environment and development systems. Concequently, development of adequate integrated indicators system is particularly important – indicators originate from values and create values, as from the point of system dynamics establishing the causal loop and change in the system of indicators applied is one of the most powerful intervention tools to change system's behaviour - if selection of indicators is wrong, it may cause disturbances in the system function and in the process of decision making this leads to overestimation or underestimation of different reactions.

The application of indicators is diverse, but perspective for appliance in integrated decision-making procedures directly dominates. Indicators are applied for the following basic decision making/management cycle components purposes: problems identification,

formulation of development strategy and planning/management objectives, monitoring of implementation of particular actions and separately also characterising communication with target groups. The qualities of the “good indicator” are widely known, but one aspect should be esp. tackled - additionality as indicators system has to include mandatory both indicators applications - measured/applied by experts/governmental servants (top-down approach) and developed by public/target groups (bottom-up approach by public initiative and participation). Summarising the above we can say, that indicators must be simultaneously meaningful in both sectors - science and policy.

In fact, it is quite difficult to develop an indicators system, which would meet all possible demands, since real systems are very complex, but even not perfect indicators are elaborated as development work should be implemented now, using those resources which are available now. Also we shall distinct the main difference between simple environmental indicators and system of sustainable development indicators. It is obvious that the latter one should be more than compilation of simple environmental indicators; it should provide also information in the appropriate time scale and including admissible thresholds.

The indicators systems are step wise applied in Latvia coastal territories. When evaluating experience of environmental indicators system development in Latvian municipalities, two main approaches can be identified - picking up most important indicators in the form of the list, providing main information, or development of complex or integrated system of indicators, showing relevance between activities, load on the environment, state of environment and planned activities to change the situation. Mostly first approach is practised in municipalities in Latvia. Let us have a look how indicators are used to provide function of the above mentioned 4 cycle components in municipalities in Latvia:

- *problem identification* - problem identification is usually performed in the descriptive form, thus the list comprises a big number of different indicators, however, it should be mentioned as a drawback that only in few particular cases problem analysis is carried out using problem structures and system analysis methods,

- *Indicators appliance for formulation of development strategy and planning/management objectives* – currently this is the weakest point in the planning of development of municipalities in Latvia, particularly – coastal municipalities. One can see quite good formal description of projects/activities, but it does not lead to indentification of deeper understanding of interactions and feedback among main sectors - local economy, social sector and environment quality. System of indicators should be elaborated according to the strategic goals of municipality development clearly defining *headline* indicators. Currently this sort of defining the headline indicators can be seen in rare cases.
- *monitoring of implementation of particular actions* – application of this particular group of indicators is the most developed in Latvia now, lately particularly – due to EU project money availability in this country. These has resulted into assessment of project results and, if at the beginning of 90-ties projects in the municipality development plans in Latvia in most cases were simply listed; now they specify also indicators of expected results of the project. However, to a large extent these indicators in fact are those of infrastructure development, further resulting into the next problem.
- *characterising communication with target groups* – elaboration of indicators for this target is very important task in the context of coastal communication. Awareness about coastal communication in municipalities is gradually growing, however it does not provide yet a systematic application of these indicators to large extent due to lack of vision among municipality administrations about their expectations as a result of communication with target groups.

Analysis, provided above, relates to the general indicators of the general development of the municipality. Let us have a short insight into “specialized” environmental indicator system development and application in coastal territories and municipalities of Latvia. In most cases municipalities do not have any specific environmental policy plan and action programme, therefore we can not talk about systematic environmental indicator system. Environmental issues are considered mainly

in two chapters of the general municipality development plan – in the chapter on public utilities infrastructure and chapter on environmental protection, hence a little number of environmental indicators is put forward, mostly related to public utilities infrastructure and protected nature territories, as well as in some cases municipality activities in formal and informal environmental education are also considered.

Another practical case - EU Interreg Deduce project - an indicators-based method for measuring the sustainable development of the coastal zone. Goals of the DEDUCE project indicators are those of EU agreed for coastal development and there are 27 indicators based on 45 measurements and test run is ongoing in coastal territories of Spain, France, Belgium, Malta, Poland and Latvia. The Deduce methodology thus is typical development of “top-down” indicators system.

Unfortunately this approach is not securing following answers: do Deduce indicators cover all principal aspects of sustainable development of coastal territories; how local features can be incorporated; are the local and regional communities practically interested in Deduce type indicators or they will act as management tool for national level authorities only; can it be used Deduce indicators for local development work, and in thus how to join them with “bottom-up” indicators.

Development of Local community indicators has to be based on “bottom-up approach” and wide involvement of local target groups, thus representing local values in addition to national and international values and thus giving interest and applicability for local development work. Our institutes experience on development of local indicators based information systems for environmental management in coastal municipalities started with Bartava river coastal region basin municipalities (1997-2000), Ziemeļkurzeme coastal region municipalities (2000-2004 and also with introduction of Local Agenda mediation center and sustainable development pilot/demonstration projects), institutes and coastal municipalities cooperation (from 1999) to develop indicators as one of tools to create municipal environmental policy and/or integrated coastal policy and management programmes. Now new challenge and actually ICM development necessity will be innovative creation and full scale implementation of both approaches in complementary one - joint integrative sustainable coastal development indicators system.

6.4. Sustainable Coastal Development Challenge

Integrative indicators system development is also closely linked with wide ICT tools application and spatial planning/management. Integrated Coastal Management (ICM) as environmental planning/management process, esp. since integrative one, obviously requires reliable spatial and other information, what should be developed and tested. EU LIFE Envifacilitate project lead by Turku University purposely was utilising open-access internet-based thematic map services to provide information about the coastal environment and thus development of online internet map services was realized to support the ICM elements enhancement for Finland, Estonia and Latvia. Map service obviously shall be as user friendly as possible and such task were set by project team, but still different lessons learned shall be gathered, esp. those ones related not only to disciplinary/sectorial, but interdisciplinary/interactive and integrative/systemic aspects of ICM development.

Besides environmental specialists and planners (“spatial planners”) at national, regional and local levels, spatial environmental information services are of increasing interest for other specialists at state and municipal levels responsible for planning/management of other sectors/topics – also s.c. “resource planners”. Services which can be provided by map tools also might be with dual realization - services to support planning activities (more “practical ones”) and services to support manifestation of the given territory and for comparison with other territories (more “political ones”). Potential users as “non planners” also are, of course, those mentioned always – general public and different specific interest groups, also media, but most important additionally is to mention public NGO’s (main actor in Latvia now advocating protection of coastal zone). Also further deep identification and detalization of user groups is very useful.

The user background shall be taken into account by all possible and known technical and interactive computer service means, but in case of “non planners” first of all is needed emphasis on initial and also post-start training and/or guided self-practice possibilities - to create appropriate training options for these special groups (programme, language, etc.), e.g. as in Latvia case on GIS basic training for school children audience.

Besides traditional and even innovative content applications of such services there is obvious need to have eventual adaptability of service also to particular and even individual interest (as Deduce project suggestions e.g. generate “my profile”, where anybody can put topics of individual interest, thematic and geographical focus etc), but especial attention is to be paid (at least, while in this development stage for coastal management in Latvia) to decision makers themselves, particularly, regional/local politicians. From the “political aspect” might be useful to elaborate service in order to have easy preparable comparison versions – between municipalities/regions, coastal/non-coastal territories etc. This will also have public relations aspect and may be effectively used by such audience as media, NGO, schools.

While touching functioning aspects of such services very important is to prepare not only appropriate hardware and software solutions, but exactly the issue of necessary training and ongoing development of human resources to be employed, especially at local conditions. Also issue of building of all type of partnerships (local/regional, general/specialized, actors/interest groups etc) here seems to be the most important issue. This is particularly vulnerable issue when speaking how to avoid duplication of efforts among different actors (national, regional; different institutions) from one side and balance between state/municipal etc institutions struggling for leading mandates, from other side.

Latter example of ICM map service joint international elaboration experience and test run regional/local practice in relation with preceeding analytical overview of some main limiting elements of ICM development in Latvia clearly sets out perspectives for such type of environmental/sustainability information management further enhancement for sustainable coastal development in Latvia and esp. for possibility and need of complementary application of this ICT case with different other type of measurements/assesments, policies and planning/management designs, practice monitoring and indicatorship systems creation and implementation, but most of all with integrated participatory coastal communication vission.

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7. Top-down and Bottom-up Indicators Application: Complementarity

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Coastal communication and partnerships shall be seen now as new challenge and aim for integrated coastal management (ICM) re-enhancement. Diverse and wide application of innovative approaches in recently growing environmental communication theory and practice as well as development of different inter-institutional and inter-municipal collaboration partnerships closely linked with public involvement enhancement process, particularly via local/regional Agenda 21 design and implementation (1), are main components of integrated planning and management esp. in case of sensitive and attractive coastal regions. Appropriate environmental and, more, sustainable development information are key precondition and effective instrument for wide understanding of development processes in coastal territories, assessment of coastal areas sustainability, clear and participatory communication, and, finally all together, for implementation of integrated coastal management practice. Existing wide experience and particular methods for development of European, nationwide and/or local information systems, based on particular set of coastal indicators, has to be still tested in both senses – theoretical frame further elaboration and practical background development (2).

Sustainable development demonstration projects for local/regional municipalities esp. for nature/culture protected territories proved to be successful for public and decision makers awareness raising in Latvia, however also still quite controversial in relation to coastal common resource areas state protection from one side and development for interest of local inhabitants. EU ICM is constantly setting framework requirements (3) for national/regional planning also for Eastern Baltic as recent newcomers. For time being the central goal in Latvia (1) was to create opportunities for wider interest groups incorporation in ICM, particularly, environmental and subsequently coastal communication elaboration in general in Latvia e.g. to create and share information and have access to innovative environmental education/training, to facilitate public participation and establish wide partnerships for environmental friendly decision-making

process as well as develop environmentally friendly behaviour/management both individually and by organizations/institutions/territories etc. Current report develops practical background for establishment of integrated coastal communication, necessarily being developed also together with sustainable coastal development indicators and their systems.

In order to characterise appropriately sustainable development of coastal territories there is to be further studied application of two principal indicators development approaches, namely „top-down” and „bottom-up” ones, as well as their complementarity for creation of integrated indicators’ system. The analysis of framework conditions for coastal indicators system creation and functioning, problems and challenges has been analysed based on the experience of Latvia coastal municipalities. The background idea for creation of indicators’ system as a tool for sustainable development penetration is that the indicators come from values and create values. As a consequence of this, change in the system of indicators applied is one of the most powerful intervention tool to change systems’ behaviour. The four principal fields of application of coastal indicators are problems identification, formulation of development strategy and objectives, monitoring of implementation of particular actions and also characterising communication with target groups.

As a basis for applicability analysis of „top-down” indicators’ system there is taken the set of coastal sustainable development indicators developed in EU and during 2005-2007 within EU Interreg project DEDUCE elaborated for practice calculation and test-run for six EU coastal countries, including Latvia (4). The structure of DEDUCE indicators system is based on measuring of indicators’ values characterising 7 principal goals (3): controlling as appropriate further development of the undeveloped coast; protecting, enhancing and celebrating natural and cultural diversity; promoting and supporting a dynamic and sustainable coastal economy; ensuring that beaches are clean and that coastal waters are unpolluted; reducing social exclusion and promoting social cohesion in coastal communities; using natural resources wisely; recognising the threat to coastal zones posed by climate change and ensuring appropriate and ecologically responsible coastal protection; The set includes in total 27 indicators and 44 measurements. Besides project based test-run in Latvia there are most principal results to

be discussed as an answer on the following challenges for „top-down” indicators systems – are the proposed indicators’ system covering all principal aspects of sustainable development of coastal territories, how the local features can be incorporated, are the local and regional communities interested in such indicators, can and how could be these indicators used for local development work, how local target groups can be involved in measuring the indicators’ values.

For applicability analysis of „bottom-up” indicators there are to be taken results of different local development promotion projects, realized in Latvia during last 10 years as well analysis of development plans of local coastal municipalities in Latvia. Based on wide involvement of local target groups, these participatory indicators’ systems thus represent local values and are applicable for local development work, at the same time the principal challenges of such indicators’ work is continuity and regular monitoring after the system is created as well as correspondence of local development aims to most broader objectives of sustainable regional and whole coastal area development.

Subsequently, principal solution of „ideal” coastal indicators system can be found in the complementary integration and integrated communication of both „top-down” and „bottom-up” indicator systems. Coastal sustainability perspective and ICM communication and indicator systems eventual developments in this region are to be further explored; elaborated and tested accross management levels and cross-sectorially.

7.1. Integrated Communication for Coastal Communication Systems Development

This strategic approach has been gradually elaborated and step-wise tested in local/regional sustainable development practice in Latvia at the Institute for Environmental Science and Management University of Latvia (UNESCO Chair in Sustainable Coastal Development (SCD) was established in 2001) since mid 1990-ties in close cooperation (incl. case studies and collaboration research work etc) with coastal municipalities and other institutions/organizations concerned at all governance levels. There are ongoing contribution projects to design and develop coastal dialogue and partnerships, research, and education/training in coastal environmental management and sustainable development in order to facilitate practice activities of municipal decision

makers and specialists, environmental and education employees, community activists and local/regional NGO's as well as all others concerned with coastal problemsolving. Municipal – university cooperation processes, including theoretical and field studies work of master/doctoral students and also professors are integrated whenever possible in coastal sustainability development practice.

There are to be recognized four main environmental management problems (1, 5) both at national and regional/local levels when enforcement of soft instruments should be necessarily increased. First of all, we shall mention insufficiently coordinated circulation and complicated availability of environmental information, inconsistency with needs of different target groups. Second - low level of general and professional education and understanding about the necessity of environmental protection and environmental problem solutions possibilities. Next is to be recognized insufficient activity of general public and other target groups, as well as a lack of facilitation mechanisms for participation in decision making, Finally, also insufficient preconditions and lack of motivation process for realization of environmental friendly behaviour/life style and community action. But the most important and non traditionally perceived one is the clear absence of integrated and mutually complementary application of all four activities necessary and mentioned above - information and education, participation and environmental behaviour as disciplinary components of so called integrative environmental/coastal communication.

Environmental communication and particularly also coastal communication could be defined more extensive as traditionally used to, particularly including also public response and participation - coastal communication is multilateral information exchange and cooperation enhancement process based on and including information and education of all related target groups, participation and environmental friendly behaviour, being required during successful development of identification, assessment, decision making and solution phases of environmental/sustainability management. Consequently the role of all communications components today is increasing and especially communication instruments are exactly those that may become the crucial tool for environmental problem solving.

This shall be called action-oriented model – the model of incremental environmental communication cycle – subsequently demonstrating the linkage between environmental communication components or the cyclic basic steps of communication process and pedagogical/practical results that within the particular cycle ensure applied and concrete practical case oriented environmental awareness development, but within the multi-cycle integration - the process of repeating and inter-supplementary self-experience development, what is facilitating general environmental awareness enhancement. Main target groups of environmental communication process shall be recognized in every coastal practice situation and directly involved: framework target groups - public sector/administration (e.g. Ministry of Environment system as well as other ministries and institutions) and local self-governments, community/general public and business/corporate sector; mediation target groups - NGO's and mass media; public education organizations and science/technology sector.

7.2. EU Sustainable Coastal Development Indicators Application in Latvia

After EU approval of the Recommendation 2002/413/CE for enhancement of integrated coastal zone management (ICZM) in Europe (3) the ICZM expert group (EG) was established and active work of Indicators and data working group (WG-ID) started. At 2003 there was prepared proposal to employ in EU two sets of indicators: indicator set to measure the progress of implementation of ICZM (progress indicator) and sustainable coastal development (SCD) indicator set of 27 indicators with 44 measures applicable. These should be the necessary tools based on objective data to be used for all interest groups discourse.

Unfortunately Latvia was not among those many EU countries employing this opportunity nationwide and participation at Interreg IIIC DEDUCE (2005-2007) project was necessary and encouraged for testing the suggested SCD indicators. The main task for DEDUCE was to develop the methodology, to calculate and to validate for coastal sustainability SCD indicators set at different scales: European, national, regional and local (4). Following there are general conclusions on SCD indicators calculations done in Latvia and prepared according to the seven main EU targets for ICM.

I. Monitor the further development of economically unreclaimed coastal area.

In the last decade there were no considerable reclamation processes on these lands, and deurbanization even occurred in some places. It is impossible to discuss the further development of urban territories, because this sort of information is not available in Latvia, even last years were very positive for building/developers. According to several parameters capital city Riga has been, obviously indicated as a development centre, but presence of the coastline in this case was a second-rate parameter. Indices for the main load bearer e.g. population changes, proves existence of the continuous depopulation processes and in coastal areas having higher rate than in the hinterland. Not all factors assigned for indicators set here were relevant for Latvia situation and since also unfortunately there were not satisfactory information available (also next CORINE Landcover data assessment is required) it is difficult to give summary assessment for this EU target block.

II. Protect, enlarge and appreciate the natural and cultural diversity.

In this field situation might be described as partially satisfactory. As a positive should be considered a fact that in a 10 km coastal zone protected nature territories having NATURA 2000 status occupy already 34% of all territory and it has been growing over the period of last five years. However, at the same time, this territory covered by NATURA 2000 is not too high in order to become an inhibiting factor for this 10 km zone general development, although there some expressions of local inhabitants having an opposite point of view. The lack of „Red Data Book” species monitoring as well as the lack of this Book itself for both monitoring background and result records proves that environmental protection measures to high extent are carried out using administrative methods and rather neglecting the dynamics of coastal biodiversity processes. Also lack of finances has some contribution for this.

There are no products yet in Latvia protected by the corresponding national label (PDO/PGI/TSG), although there is a number of products, which should have such label (like some sorts of rye bread, sweet-and-sour bread, hempseeds butter). However national quality label protects relatively high proportion of food staff products having a local origin.

III. Facilitate and support dynamic and sustainable coastal economics.

Mainly port activities and tourism can be discussed. The turnover of cargo by volume and its dynamics speaks about the development of this branch of economy, at the same time increasing the load on the sea environment. As a positive factor, the gradual equalization of cargo turnover in big ports of Latvia should be mentioned as well as increase of contribution also by the small ports. The tendencies in the passenger transport development is unstable as too much depend on the local political factors.

Relatively small number of tourism accommodation objects passed the local eco-certification and coastal areas do not stand out among other regions. At the moment of finishing the indicator calculations, none of them had European ecosertification, but now some do have it. The main reason is lack of interest among local clients as well as no willingness to pay for unnecessary things, according to their opinion. Taking into account the relatively low intensity of tourism, it can not be considered as a critical drawback also from sustainability point of view. Although this tourism intensity tends to increase at a relatively high rate, but this occurs mainly due to activities in at/nearby capital city Riga.

In fact, nothing can be discussed about the employment in different sectors, as no sufficient regional statistics has been collected, allowing to define tendencies specific for the coastal areas. There is almost no information about the seasonal statistics and migration of workforce. The lack of this statistics reflects also actual indifference on the governmental level for the issues of regional development and workforce issues.

IV. Guarantee cleanness of the coast and non-pollution of coastal waters.

In this field, inspite of growing antropogenic loads, situation can be described as quite good. According to accounting of accidents as well as monitoring of oil slicks from the air, sea pollution with oil products has decreased since the beginning of the last decade. Positive tendencies are registered also in bathing water quality, although the inlet from the Daugava River determines some „hot spots” on the beaches of Vidzeme. Due to incomplete range of measurements it is more complicated to assess the inlet of „nutritional” P and N, however, increase tendencies since the beginning of 1990ties are rather small if they exist at all.

The volume of collected coastal waste is rapidly growing, however this corresponds not only to the waste production growth, but also to the growing activity of

waste accountance and clean-up works. In the same time, some coastal municipalities are rather slow for this works.

V. Decrease social exclusion and support social cohesion in coastal municipalities.

In fact, it is impossible to do a complex assessment of the progression towards this goal, partially due to the lack of regional statistics and other reasons too. Due to the lack of regional statistics it is impossible to assess the coastal impact neither on population income, nor social exclusion and their tendencies. There is no official definition for social exclusion at all in this country. Some picture can be created only for unemployment indices, which are relatively favourable in coastal municipalities. In some places even some lack of workforce is registered, which can be considered as development impeding factor, but its impact on the sustainability is smaller.

Well detailed information is available about values of real estate. The overwhelming growth of the prices do show high proportion of speculative transactions, which is in diametral contradiction with sustainability preconditions. However, information about real estate outside the big cities is biased by the low market intensity. Other measures of population prosperity like „second homes” (summer dwellings, second flats etc.) are not accounted at all.

VI. Wise use of natural resources.

The picture is quite favourable here. Only one fish species is overfished (cod), while others are yielded within biologically safe limits despite of continuously growing catch volumes. Most probably this increase will not last for long.

The problem of drinking water resources being so acute for many countries is not an issue for Latvia and the existence of rich underground resources permits optimistic future assessments.. In some places water quality is an issue due to the presence of some natural components (iron) in it, which are not dangerous for the health, but reduces the water taste quality and causes damage to the technical appliances due to appearing deposits.

VII. Clarify threats for coastal zone caused by the climate change provide means for ecologically acceptable protection of the coast.

Some coastal areas are obviously exposed to the factor of threat, like wash-off of the coastline and flooding due to strong storms, but until there is no whole background to argue, that this is due to the climate change and rise of water level. In fact, neither meteorological, nor hydrological observations of the required parameters do not show any such tendencies over the period of the last 30 years. Spatial analysis of threats as it is required by the project can not be done, due to the lack of systematic data, some information is missing at all or is not accessible for calculations on the reasonable financial conditions. Base line is not established in this country, digital model of the terrain is not accessible also and many other data are missing, what does not allow assessing territories exposed to risk and endangered resources there.

7.3. Bottom-up Indicators and Coastal Application Development

Our local indicators development practice started with design and implementation of sustainable development projects with Bartava river coastal region basin municipalities (1997-2000) and Ziemeļkurzeme coastal region municipalities and other main stakeholders (2000-2004, incl. also introduction of Local Agenda21 mediation center), what has been expanded into institutes and coastal municipalities partnerships based on case study research (also collaboration research) cooperation (from 1999 ongoing). Quality of local sustainability process initiation and further facilitation is based on communities self-experience enhancement and the main approaches for such developments are (6): self – active work approach, project approach, community involvement approach, interest group approach, team work approach, local involvement approach and environmental communication approach. Local population/interested individuals and local experts/specialists/decision makers step wise participatory capacity creation is the must for development of local community indicators - “bottom-up approach” subsequently requires wide and active involvement of local target groups, thus representing local values and interests, what importantly develops into “possessing indicators ownership”. Next challenge, actually, necessity for ICM development, shall be joint integrative sustainable coastal development indicators system done as innovative creation of both national and local approaches in complementary one.

Discussion and conclusions. Integrated coastal management has been recognized widely and actively developed in EU, incl. by developing international and national strategies as well as by ongoing application of the main approaches and principles agreed into coastal practice, what is setting corresponding requirements for national/regional planning for all coastal member countries, incl. Eastern Baltic as recent newcomers in this ICM field.. Particularly important is further and innovative development of information and communication instruments at their growing variety of different types and complexities, esp. when combining them in diverse application sets, what is to be done parallelly and in complementary interrelation with traditional groups of instruments as planning and infrastructure, legal and economic/financial ones.

Indicator system elaborated under the frame of DEDUCE project in general was evaluated in Latvia positively. Introduction of this system will provide new information and knowledge both to local governments and national institutions responsible for coastal management and in future might contribute to the optimization even of human and financial resources (7). However calculation process have had a number of difficulties e.g. there were no national level data at all for seven measurements, several important indicators could not be seen at the local municipality level and so losing much as for coastal indicator as well as at the moment coastal zone related information is not a topic for statistics and no one, at least related, focal point in the country creating a number of information gathering problems.

During project work in Latvia, incl. also national assessment workshop, the following principal areas of lacking indicators were detected: coastal landscape characterising indicators - although development of measurement methodology for this purpose may be quite sophisticated, this indicator is important as well; polluted coastal sites indicator – mapping of distribution of polluted sites in the coastal zone; coastal communication indicator – the whole complex of elements for integrative communication (coastal information and education, coastal participation and environment friendly activities); level of fragmentation of natural habitats – it may be in total quite enough natural territories but biodiversity conservation in a whole area may suffer from the fragmentation of these territories. When defining the scope of social conditions, it is worth to measure how current lifestyle of coastal population is related to coastal and

marine resources, thus here additional measurements may be useful: level of which coastal population identify themselves as coastal inhabitants having particular features of living style and special interests characteristics for coastal and marine; level (percentage) of coastal population which employment is directly related to coastal and marine resources – even employment patterns are measured under other objective, this measurement has not only meaning for economy but also very important meaning of social conditions.

Coastal sustainability perspective and ICM communication and indicator systems eventual developments in this region are to be further explored, elaborated and tested at both directions as for planning implementation vertically across management levels and horizontally e.g. cross-sectorially as well as, most importantly, at the same time developing systemic integrations of coastal sustainability. Elaborating of national/regional and local coastal case studies research prepares further practical background and also theoretical frames for renewing of ICM strategies, particularly, development of integrated coastal communication using not only, as usually traditionally perceived, diverse coastal information, but necessarily also complementary integrated it with coastal education/training, public participation/cooperation and partnership development as well as coastal environmentally friendly behaviour, what is to be mandatory done also together with sustainable coastal development indicators and their systems.

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8. Sustainable Development Indicators Establishment

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8.1 Introduction to Indicators Definition

In the literature on measuring sustainable development, a number of sustainability indicator definitions by different authors and institutions can be found being based mainly on two approaches: conceptual and functional [1].

As the name suggests, conceptual definitions are derived from the indicator concept itself and are important for understanding it. According to FAO definition [2], an indicator is defined as a *variable, pointer, or index related to a criterion. Its fluctuations reveal the variations in those key elements of sustainability in the ecosystem, the fishery resource or the sector and social and economic well-being. The position and trend of an indicator in relation to reference points or values indicate the present state and dynamics of the system.* A more general explanation is given as by Garcia and Staples [3]: *indicators are pointers that can be used to reveal or monitor conditions and trends in the fisheries sector and the marine environment.* Similar definitions can also be found by Slocombe [4], Fletcher et al, [5], OECD, [6], however one of the most comprehensive definitions is offered by Maureen Hart: *“An indicator is something that helps you understand where you are, which way you are going and how far you are from where you want to be. A good indicator alerts you to a problem before it gets too bad and helps you recognize what needs to be done to fix the problem. ... They allow you to see where the problem areas are and help show the way to fix those problems.”* [7].

All of the above definitions, however, answer to the question of „Why do we need indicators?” rather than explains what it actually is. Functional definitions explain what exactly the indicator does and how it differs from a simple parameter or measurement. This type of explanations is provided by Garcia et al [3], Smeets and Weterings [8], Hak et al., [19]). From the definitions analysed, the following one, approved by the United Nations Council on Sustainable Development in 2001, has been selected as the most comprehensive:

Indicators for sustainable development are in order to: 1. translate physical and social science knowledge into manageable units of information that can facilitate the decision-making process; 2. help to calibrate and measure progress towards sustainable development goals; 3. provide early warning to prevent damage; and 4. communicate ideas, thoughts and values (cited from Brown, Reyntjens [1]).

However, when constructing a specific indicator system, the practical use of this definition is cumbersome, as it fails to give a clear answer as to whether the selected value corresponds to indicator specifics or not. To receive such an answer, the indicator definition needs to answer to the following questions:

1) what values can serve as indicators, 2) what do these values characterise, 3) what is their role in the governance system, 4) what are the limitations of indicator functions, 5) what formal qualities distinguish an indicator from other values that can be measured, 6) what is the significance of the measurable parameter for a given management system. The definition cited earlier [1] answers to the first three of these questions and partially to number six as well.

Based on the above, we find the role of indicators in the hierarchical structure of management elements (Figure 1), which is built in line with the stages of the planning implementation cycle. Manageable units = measurable units; it means that an indicator must be expressed by numeric values. The same point also indicates to the principal role of indicators in the management system. Points 2 and 3 reflect a need for a string of successive measurements. Point 4, we consider, is more a conceptual one; to some extend, this also applies to Point 3.

Indicator applicability limits ensue from the above indirectly. A more specific description of it is provided by Sainsbury and Sumaila [10], defining that „...*an indicator that does not relate to an operational objective is not useful in this context*”. More specific conditions, however, are missing. A requirement for a

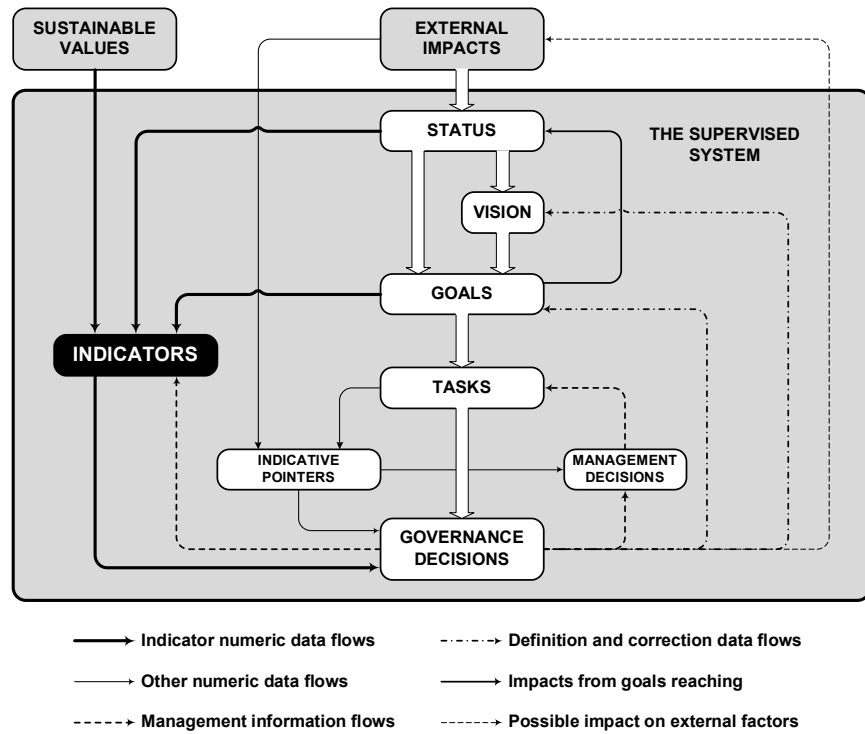


Figure 1: Indicators in planning

formal feature cannot be found in the definitions mentioned; however, we find such indications in the latest literature: *a datum or variable observed becomes an indicator only once its role in the evaluation of a phenomenon **has been established*** [11]. In fact it means that relevant management decision is required. This also follows from the need for financial and human resource allocation for obtaining (and often accumulating) the data, doing the calculations and preparing the reports, which can take place only based on management decision.

8.2 Definition Area of Sustainability Indicators

Indicators reflect the current situation as a point of reference on the one hand, and as advancement towards a strategically set planning goal on the other. If we consider a goal as a numerically defined value, it is easy to understand that it is located on a scale and can be corrected both within the current planning cycle and within new planning cycles to come. The tasks that are the means for reaching these goals cannot be placed on

this scale, as in case of tasks, the attainment of the particular value characterises the end of the process, e.g., the use of financial resources allocated for a particular project. This also indicates to the fact that an indicator needs to function at the level of long-term goals. The need for assessing the importance of the measurable parameter ensues from practical considerations as well: the indicator method, when applied correctly, is expensive and complicated enough to use it for solving relatively generalised and long-term tasks only. To create an indicator system for the coastal sustainability long term monitoring, being based not only at the task level is very challenging and this certainly shall include then both indicators as we describe and also indicative pointers, giving additional insight into the status of particular management system, as well.

Based on the above considerations, the authors first agree on the role of an indicator within the hierarchical cycle of governance (Figure 1). The diagram shows that indicators refer to the hierarchical governance level of goals only, defining initial conditions, status with relation to goal implementation and dependence on our value system, if we speak of the values that we consider worth preserving, i.e., that are sustainability factors. Indicators may influence process governance through governance decision-making – by determining or adjusting this governance (and the goals themselves) in accordance with indicator readings. The notion of sustainable governance contains two sub-notions: sustainability as the ability of the system to preserve the defined values, and governance as influence on this system. Accordingly, the definition of sustainable governance indicator should reflect both aspects. An attempt to do it in one definition could lead to complicated and miss-interpretable construction. Therefore it shall be divided into two parts: governance and sustainability.

A governance indicator illustrates a development factor or a set of factors and helps the public and decision-makers to get an impression of and control the situation with regard to the initial conditions from which the development goals defined in development planning documents ensue at the given governance level. In other words, a parameter or a group of parameters can be defined as a **governance indicator** if it/they reflect comparatively and unequivocally the **numeric values of resulting indications concerning governance goals and changes in these values** and allow for determination

of the status and trends, and which can – directly or indirectly – be influenced significantly with decisions on the given governance level only.

A sustainability indicator reflects our perspectives on the values that are to be preserved in the name of our own and future generations: a parameter or a group of parameters can be defined as a **sustainability indicator** if it/they reflect comparatively and unequivocally the **numeric values of sustainability impact factors and changes in these values** and allow for determination of the status and trends, and which can – directly or indirectly – be influenced significantly with decisions on the given governance level only.

A parameter which at one governance level is an indicator is not necessarily an indicator at other levels; it follows from the presence of a governance level in the definition. A governance level here means the influence area within public administration: municipal, regional, national, etc. In case it is purposeful – for the sake of overall clarity – to show the values of such a parameter, this would then be an indicative pointer. It does not possess all functions of an indicator; that is, it does not reveal the efficiency of decisions taken. And vice-versa – a parameter which is only an indicative pointer at one level may become an indicator at other levels.

A phrase “...can be defined... “indicates the need for an administrative decision for a parameter to become an indicator. When applying the above definitions, an **algorithm scheme for developing an indicator system** may be constructed (see Fig.2.). To be able to use the resultant product as a full-fledged indicator system, all indicators and indicative pointers need to have calculation methodologies developed and specific methods of result representation indicated.

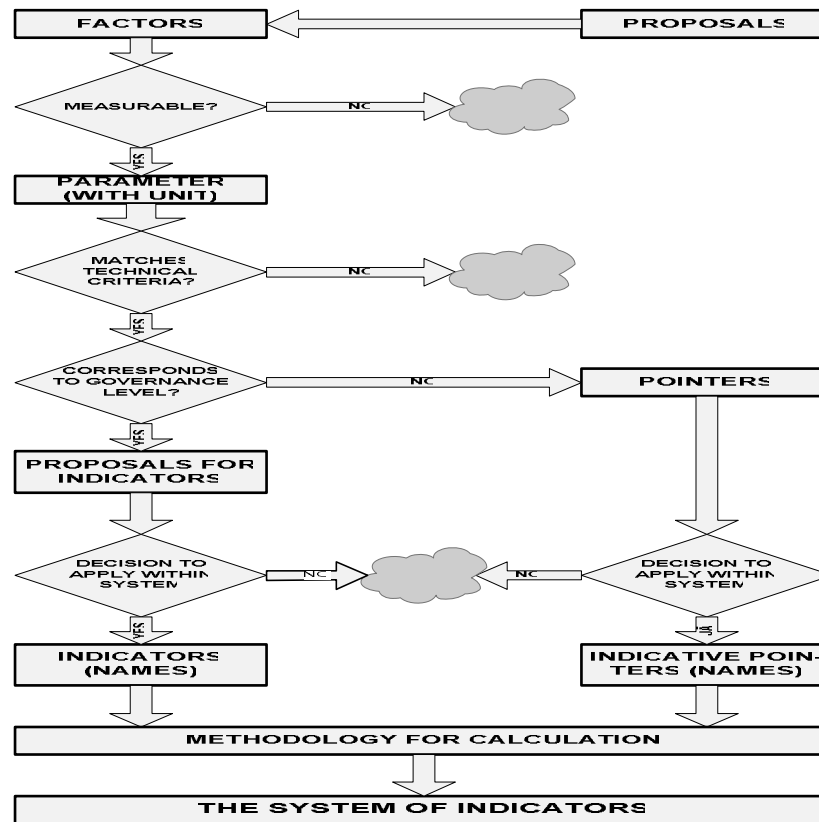


Figure 2: Algorithm for indicators

Also following generic conditions are to be taken into account. Proposed factor is a parameter when it is measurable numerically. The factors proposed are in practice selected by various means: in system analysis, participatory within different target groups, following expert conclusions, through analysing existing systems as examples, etc. Also parameter may not be used for constructing an indicator when its set of data does not meet the technical requirements regarding source data. This may not always be determined at this state; it sometimes manifests itself only when developing a methodology for calculations, or even worse – when indicator calculation is done for the first time. Parameter (or a group of parameters) becomes an indicator when it meets the technical requirements, is located within the indicator definition area and when a decision has been taken to apply it as an indicator. However, if a parameter meets the requirements but is not located within the indicator definition area, it may only be used as an indicative pointer.

From the above definitions, indicator utilisation limits, or the definition area in the respective governance system, also derive.

1. Given factor or set of factors F may serve as a territorial sustainable development indicator if it illustrates the implementation of sustainability goals defined in local governance planning documents and respective progress, and whose implementation and control falls within the competence of the given governance level. Labelling the governance level with L_i , the following law applies:

$$F \in L_i \quad (1),$$

2. Given factor or set of factors F may not serve as a territorial sustainable development indicator if it only illustrates the values of an isolated planning task which is an intrinsic part of the set of goal-oriented measures and whose implementation applies unequivocally to a lower governance level competence:

$$F \in L_{i-n} \quad (2),$$

where n – a degree difference in governance levels; $n \geq 1$.

3. Given factor or set of factors F may not serve as a territorial sustainable development indicator if the changes inflicted upon it by the given-level competence decisions - ΔF_{int} – are small compared to the changes inflicted by a higher-level competence decisions ΔF_{ext} :

$$\begin{cases} F \in L_{i+n} \\ \Delta F_{ext} \gg \Delta F_{int} \end{cases} \quad (3).$$

Based on the definitions and through assessment of indicator systems and their designing process, the concept of indicator integrativity was introduced, i.e., the range in which the particular indicator characterises a given governance system. The integrated management cycle planning applied in Saulkrasti municipality was based on municipal situation analysis in sustainability dimensions and on segmentation of priority integrative problem areas at dimension intersection points. The indicators were selected separately for characterising sustainability dimensions and also integrative problem areas.

By way of combining both resultant systems and assessing how the indicators refer to sustainability components, we can divide all indicators into 4 groups:

- **sub-sectoral indicators** – describe an isolated, but governance level-specific aspect of the respective sustainability dimension,

- **sectorial indicators** – principally describe one sustainability dimension,
- **integrative indicators** – describe integrative problem areas and other processes which concerns at least two sustainability dimensions,
- **integral indicators** – describe the key, more general pointers of the governed system that characterise a given governance system in its entirety and/or compared to other similar systems.

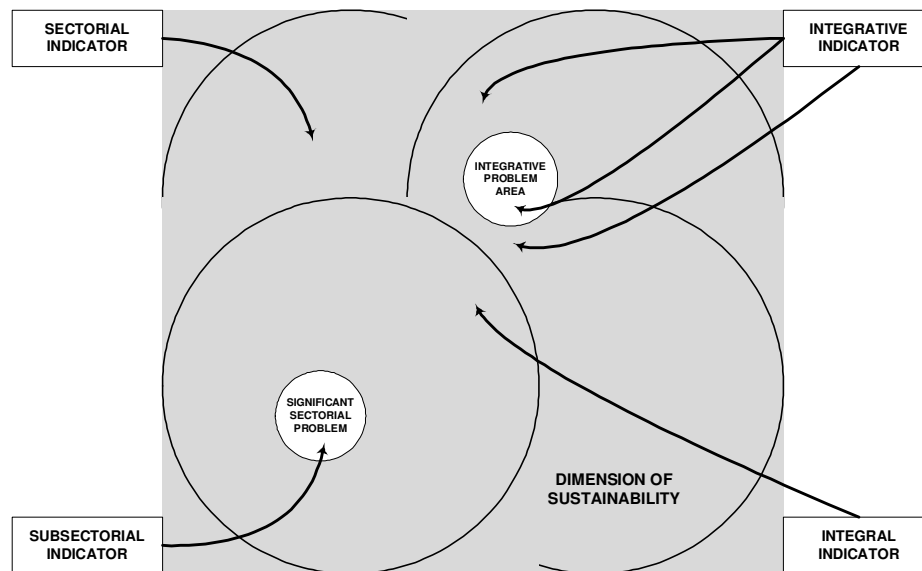


Figure 3: Indicator integrativity

The above division is to a certain degree similar to the one found in [12], but this source groups indicators according to target audience level pyramid principle and does not reflect the presence of the fourth dimension of sustainability – governance and communication environment. It can be understandable that the location of an indicator on the scale of integrativity levels generally correlates to the location in the target audience level pyramid, but this is not quite the same. Such integral indicators are fully possible which are significant or understandable only to expert audience (but required), and an isolated sub-sectoral indicator may also characterise a very severe problem important at all levels - from the general public to experts and governance decision-makers. If both approaches are applied, it is convenient to analyse and assess the balance of the indicator system as per sustainability dimensions and to differentiate the contents of the material when drafting indicator reports and public reviews.

8.3. Spatial Properties of Coastal Sustainability Indicators

An indicator system for measuring coastal sustainability differs from the general case by its spatial specifics: the coastal zone is formed by a coastal line with the related set of other geospatial elements by Clark, [13]. The indicator system through which coastal sustainability is assessed should therefore be able to at least differ the coastal zone from the inland and provide a comparison, to establish the origin of impact factors on the coastal status and development trends, and to create understanding of the distribution of coastal impacts within the governance territory.

Ideally, the term `coastal zone` should apply to a territory where the specific coastal impacts can be detected, and vice versa – a territory which impacts the developments on the coast and its proximity, as these impacts:

1) may in advance be unknown precisely enough, 2) may change over time, 3) differ for different factors, 4) The specifics of spatial distribution of the data used may prevent their correct differentiation. In practice, the term `coastal zone` is therefore applied to a **relative** territory (see Fig.4) which, within a single system, may in addition be applied in a number of ways depending on the data character.

Based specifically on the character of data spatial distribution, the EU project DEDUCE, which aimed at developing a European coastal sustainability model based on indicator system measurements, distinguished four key types of coastal zone definition as by Marti X. et al [14]:

- **administratively territorial**, which mainly represents the social and demographic information, as it is accumulated mainly concerning these aspects, with the local government as the smallest unit,
- **co-ordinate character**, which reflects locations of measurements in specific geographical co-ordinates (e.g., quality of surface waters) or in an object which is small enough for the range of measurements and can relatively be taken as a co-ordinate point (port operation) or is related to the geometrical coastline (coastline dynamics, artificial coastal constructions),
- a fixed-width coastal zone formed by the coastline's **geometrical buffers**; in the specific case differentiating between the nearby coastal zone (1 km) and

the distant coastal zone (10 km); in this manner, geospatial information is assessed: land use, protected territories, etc.,

- **combined**, which contains the features of administrative territorial and coordinate points (e.g., number and location of objects in a specific territory); in this manner, thematic sectorial information is most often reflected such as the location of eco-certified tourist residences, etc.

In our opinion, an additional fifth type is worth distinguishing on the local planning level, which by its data processing methods is similar to the geometrical but is related to spatial **planning elements** rather than buffers: protected zones and other types of territories with limitations of economic activities or other special regulations concerning the use of the particular territory. The nature of data determines not only coastal definition types but also the spatial relations to the coast by indicators themselves. The following cases can be distinguished:

- **special coastal** indicators directly characterise some values characteristic of the coast only, e.g., catch of fish, bathing water quality, artificial coastal constructions, etc.
- **coastal discernible** indicators which characterise elements not directly coast-specific but where a correct spatial assessment of the coast-related impacts is possible
- **coastal relatively discernible** coastal indicators, where the spatial distribution of data is „unclear”, which prevents the correct determination of these impacts but our common knowledge about the territory allow for at least a qualitative assessment.
- indicators **non-applicable** directly to the coast, which characterise a factor in the overall territory as a single inseparable object (e.g., number of residents, municipal budget values). However, here the coastal impacts can be assessed by mutually comparing such territories.

A strict line cannot be drawn between the discernible and relatively discernible parameters. It may in each case depend on data gathering and accumulation type. Also, when selecting the particular parameter as an indicator,

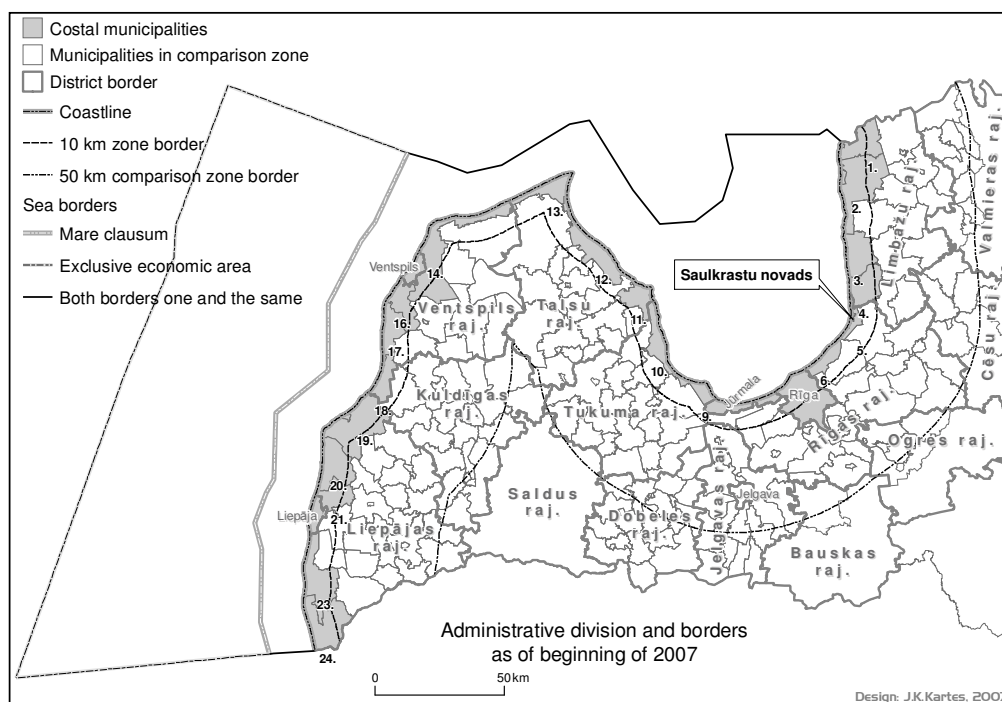


Figure 4: Coastal zone in Latvia

we may plan changes in the data structure so as to improve coastal assessment opportunities in the periods to come. This border also depends on the size of the local government. In national or international level indicator systems, the precision „to the municipality” is sufficient and even desirable, as in most cases easily available, safe and reliable statistical information is at hand [14, 15]. In local planning, to be able to compare different parts of a territory and obtain information on coast-related impacts, more detailed elements need to be distinguished: isolated places of residence, land property (cadastre units), etc [15]. In principle, this applies also to characterisation of spatial distribution of data origin (and availability).

The developed classification helps us understand how large and in which areas and governance levels can the coast-specific impacts and processes be, and the role of governance decisions in these, as well as allowing for a more profound assessment of the importance of the impacts established as a result of measurements. There should be added, that according to Latvia legislature 5 km zone formal border is the geometrical border of a limited economic activity zone, which may be altered based on local geographic circumstances. The coastal dune protection zone is determined according to

the Protected Zone Law: in villages – 150 m, outside – 300 m in width. The coastal geometrical buffer is altered by adding specially protected biotopes which adhere to the formal protected zone.

The above approach helps select the values to be measured which – in the current data availability – reflects most fully all the coastal impacts in their different aspects, and to receive significant additional information for the interpretation of results. In addition, data sources may also be evaluated and – where possible – the degree of detailed elaboration may be improved so as to increase the indicator's spatial resolution. This approach may be fruitful not only for the coastal area but in all areas where a factor with a spatial impact is present in principle: proximity of a large city, a state border, geographical obstacles, etc.

8.4. Sustainability Indicator System Case Study

Saulkrasti county, which is a small, relatively urbanised (for Latvian conditions) Baltic Sea coastal territory (Fig. 3), had in 2009-2010 coastal integrated development guidelines elaborated for it within the University of Latvia COBWEB project [15], as the central component of municipal integrated governance. Special attention was devoted to measuring sustainability, and for this purpose, a system of indicators was developed. The system was elaborated based on the analysis of four dimensions of sustainability (natural, social and economic environment, governance and communication) and integrative problem areas as defined on their points of intersection.

Initially, over 100 indicators were proposed. However, after a selection according to the algorithm as presented in Fig. 2, the resultant system contains 55 indicators which thematically form 24 groups and reflect the status of all four dimensions of sustainability and provides overall characterisation of sectors, integrative problem areas and municipality as a whole (number in brackets show number of indicators in given thematic group; percent of total number of indicators by sustainability dimensions):

I. Nature environment (total 15, 27%): Green frame status (3), Potential loads on the environment from public utilities (5), Air quality and climate change factors (3), Surface water quality (1), Land use development (1), Nature risks (2).

II. Economic environment (total 14, 26%): Economically active people (1), Municipal budget (1), Traffic routes (2), Skulte port development (4), Tourism characteristics (6).

III. Social environment (total 13, 25%): Health care characteristics (2), Supporting for cultural environment (3), **S3** Employment and entrepreneurship (2), Social care and social security (2), Education system characteristics (1), Social life quality (3).

IV. Governance and Communication (total 5, 9%): Activities for environment maintenance (1), Information of society about environmental events (2), Activities in nongovernmental sector (2).

V. Integral indicators (total 8, 13%): Number of inhabitants (1), Area development index (1), and Area attractiveness index (1), Opinions of society (5).

We can see that within the system, both the traditional dimensions of sustainability are equally represented, except, governance and communication as horizontal dimension introduced as having increasingly growing role in Latvian conditions particularly, since the measurement possibilities and process itself is more time and other resources consuming as often has been based on opinion pools. It is difficult to find pointers that meet indicator requirements which characterise governance and communication and these are therefore represented to a lesser degree. This drawback, however, is compensated by the integral pointers section, which, together with the other sections, reflects the efficiency of governance perhaps most clearly, without singling out the contribution of any particular dimension.

The prevalence of integrative indicators in the system (64%) stems from the broad approach to planning, which is based exactly on such integrative perspective of seeing sustainability dimensions in their interactions. Directly integrated problem areas are decrypted by 39% of all indicators. Separate sectors (e.g., tourism) are singled out when the related issues is significant enough for the development and welfare of the entire territory. The integral indicators also include separate indicators selected to characterise particular dimensions, as these bear a considerably larger content load, but are overall designed to characterise resident attitudes and opinions. Their number is comparatively small; in case of a bigger proportion, there is a risk of obtaining too general information, which provides an insufficiently detailed picture for the purposes of practical action and

decision-making. The usable data sources are mainly the information accumulated by state and municipal institutions, and opinion-polls of businessmen, NGOs and residents. In one case, the utilisation of the opportunities afforded by public monitoring is planned.

Considering the role of the coast in Saulkrasti county, a conclusion may be made that the 34% of indicators bearing the load of clear coastal characteristics (special coastal and with clear resolution of coastal zone), may be insufficient for this purpose. In future, however, by means of improving data collection and accumulation in municipal institutions, this share could be enlarged towards coastal relatively discernable data. The system has been discussed with municipal and planning experts and the wider public in seminars and focus group discussions and assessed as a practically implemental as Saulkrasti county strategic planning element, being generally balanced indicator system, which emphasizes the local specifics of Saulkrasti and includes the key general ones.

Conclusions. The developed indicator definitions and indicator selection algorithm allows for the careful selection of parameters that correspond to indicator meaning and purpose. This helps eliminate errors which might occur by introducing to the system parameters inappropriate or insignificant to a given governance level. The assessment of indicator spatial characteristics and classification allows for building an indicator system, in which the impacts of a coastal or other spatial factor on the respective governance system are reflected as fully as possible. When developing an indicator system for sustainability assessment in local coastal municipalities like Saulkrasti county, application of suggested above selection of indicators and the observation of indicator spatial characteristics leads to the resultant system, being balanced in terms of both reflection of sustainability dimensions as well as common territorial characteristics and description of coastal impacts. This type of an indicator system provides the opportunity to not only monitor sustainability of a territory and associated changes but also to follow the governance processes and control implementation of the strategic objectives as set in development planning documents and ensure continuous information to decision-makers and the public at large.

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9. Sustainable Coastal Development Indicator System: National Case

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Appropriate sustainable development information resources are key preconditions and effective instruments for the wide understanding of development processes in coastal territories, assessment of coastal areas sustainability, clear and participatory communication, and, finally all together, for implementation of integrated coastal zone management (ICZM) practice. Coastal communication and partnerships shall be seen also as a new challenge and aim for the necessarily integrated coastal management (ICM) re-enhancement.

There are to be recognized certain set of preconditions [1] while elaborating the frame for environmental information management and system development in coastal municipalities within sustainable development context. Firstly, the environmental information should be considered as a part of the whole sustainability communication cycle process, taking into account the mutual interaction with all other communication components as environmental-sustainability education and training, participation and partnerships building, and environmentally friendly behaviour [2]. Further on, this will be an established information system where municipalities should participatory incorporate all principal actors e.g. general public interest groups and private business, self-governance and governmental institutions as well as mediator actors – media and non-governmental organizations, science and education. Parallel to this, the information system should reflect and integrate various environmental management dimensions at the coast e.g. public-national and municipal itself, corporate and household as well as regional/international environmental and sustainability management. This information system should include all disciplinary and integrative sustainability information resources, which should be identified and analyzed together with corresponding coastal communication tools to be systematically introduced and systemically used.

To develop an adequate information system and further on related indicators systems having met all possible demands, certainly is quite difficult as even simulations of real systems tend to be very complex, especially coastal ones and there are obvious

differences between simple environmental indicators and system of sustainable development indicators. The indicators systems are step wise applied in municipalities in Latvia as well as, during the last decade, in coastal territories. When based on active and wide involvement of all local target groups, such participatory indicators' systems truly represent not only the local values, but are also at the local decision-making level and is practice oriented and so directly applicable for municipal development work, and at the same time having as well correspondence perspective of local development aims to the more broader objectives of sustainable regional and whole coastal area development [3]. Evaluating this experience of ongoing tests to develop the comprehensive environmental and/or sustainability indicators system, one should recognize again the principal necessity of the complementary integration and also further on integrated communication of both by the „top-down” and the „bottom-up” approaches designed and implemented indicator systems.

For applicability analysis of the national „top-down” indicators system there is taken the set of SCD indicators developed in Europe by EU ICZM expert group (particularly, working sub-group on Indicators and data – WG ID) in 2003 [4] and during 2005-2007 within EU Interreg project Deduce elaborated for practice calculation and test-run for six EU coastal countries, including Latvia [5]. The structure of DEDUCE indicators system is based on measuring of indicators' values within recognized 7 principal SCD goal sectors [6]: controlling as appropriate further development of the undeveloped coast; protecting, enhancing and celebrating natural and cultural diversity; promoting and supporting a dynamic and sustainable coastal economy; ensuring that beaches are clean and that coastal waters are unpolluted; reducing social exclusion and promoting social cohesion in coastal communities; using natural resources wisely; recognizing the threat to coastal zones posed by climate change and ensuring appropriate and ecologically responsible coastal protection. The indicator set includes 27 indicators and related 44 measurements to be done.

Besides project based test-run in Latvia there are most principal questions to be studied and discussed as far as possible now seeking answers on the following challenges for „top-down” indicators systems when tackling local coastal sustainability issues: are the proposed indicators system covering all principal aspects of sustainable development

of coastal territories; how the local features can be adequately incorporated; are the local and regional communities and local target groups interested and subsequently could be involved in the realization of such indicators; whether and how could be these indicators used for local development work. Elaborating upon national/regional and local coastal case study research prepares further practical background and also theoretical frames for indicator system development and also renewing of ICM strategies.

SCD indicators calculation: Deduce project case in Latvia. According to the data available in Latvia they are important not only to calculate the necessary number of indicator measurements, but also to evaluate whether the whole proposed list of indicators [Deduce] will give the relevant information regarding if all will be inline with sustainable development planning in coastal territories. Initially we shall discuss, both calculation results as well as principal content relevance of different groups of indicators through the test run experience in Latvia and then later also to analyze both administrative and technical problems regarding coastal data obtaining and processing as all necessary activities have to be properly prepared and also realized into practice to provide only relevant information for decision making.

9.1. Indicator System Development: Evaluations

The Deduce project recommendations for EU [6] included main results and conclusions evaluating the calculation process itself, reviewing of the set of SCD indicators provided by the EU WG-ID, as well as further work needed to build a complete sustainability evaluation model. Current SCD indicators framework tested could be of certain use in the decisions systems over the European coastal zones, but further developments of proposed indicator system are to be necessarily elaborated. During Deduce project there were recognized by partners several missing measurements not included in the set of indicators proposed by the WG ID in 2003: use of marine space; adapting biodiversity indicators; sustainability of maritime activities; state and evolution of the coastal water masses; social conditions; fisheries indicators adaptations; other potential effects of the climate change [6].

During Deduce project work in Latvia, incl. also national assessment workshop, the following principal areas of lacking indicators were detected: coastal landscape characterizing indicators - although development of measurement methodology for this purpose may be quite sophisticated, this indicator is also important; polluted coastal sites indicator – mapping of the distribution of polluted sites in the coastal zone; coastal communication indicator – the whole complete set of elements for integrative communication (coastal information and education, coastal participation and environment friendly activities).

Another useful discussion may be on the development of a particular measurement revealing the threats to biodiversity. At the moment different indicators characterizing threats included in the Deduce indicators system, are divided under different objectives. For the practical application of planning purposes it is important to clearly show both the origins and priority ranking of the threats to biodiversity. These threats may be made not only by the land-transformation but also by the industrial development of coastal cities and related risks of this type. One measurement example may be the level of fragmentation of natural habitats; it could be on the whole a sufficient amount of natural territories, but biodiversity conservation in the overall coastal area may suffer from the fragmentation of these territories.

Sustainability of maritime activities (and indirectly – activities in coastal zone) has to be evaluated also in relation to the threats disrupting these activities. It is important to develop a systematic and broad definition and identification of threats/risks of different types for this purpose. At the moment the Deduce indicators measure amount of oil spills, but there may be more risks/threats which need to be accounted. Also the current status and developmental tendencies of coastal fishery is particularly important due to its status in terms of tradition, role in cultural heritage, and coastal economy. Thus the particular measurements more deeply revealing the sustainability of coastal fishery processes would be more apparent with measurements such as fishermen number change tendencies, and/or evaluation of the ratio between the economic values of landings of the fish stocks which are within safe biological limits, against those fish stocks which are over fished etc.

Also when defining the scope of social conditions, it is worth measuring how the current lifestyle of the coastal population is related to coastal and marine resources, thus here additional measurements may be useful: level with which the coastal population identify themselves as coastal inhabitants having particular features of living style and special interests characteristics of coastal and marine areas; level (percentage) of coastal population which employment is directly related to coastal and marine resources – even employment patterns are measured under other objective, this measurement has not only meaning for the economy but also very important indicator of social conditions.

The indicator calculation process itself in Latvia has also had a number of difficulties e.g. there were no national level data at all for seven measurements for indicators. Several important indicators could not be recognized at the local municipality level adding to the lack of coastal indicator information as well as the fact that at the moment there are no statistics for such topics, which all together are creating a number of coastal sustainability measurement problems. Also different institutions are submitting their statistical reports to different state management institutions, necessitating the establishment of a kind of the national focal point (coastal observatory), collecting and eventually integrating all relevant coastal information and even coastal communication. This may serve needs not only limited to the development of the process of coastal data preparation. Of course, these specific comments as well as those more general ones above may be elaborated upon in more detail, but all this have to be taken into account when planning both national SCD indicator system and also for joint EU SCD policies applications as this might be perceived also as a kind of some situation similarities representation for Eastern Europe.

There are also several cross-national generalizations and practical recommendations to be known after particular test run in Latvia, which might be useful also for other organizations and countries interested in the use of existing or new design of sustainable coastal development indicators. There are certain indicators in the Deduce set actually expressing significant differences, understandably, between Latvian coast of the Baltic Sea and, for example, Mediterranean one. Thus selective approaches or variable measurements for the same indicator could be introduced parallel to and in some cases, maybe even the development of more appropriate indicators, which can really

serve as a catalyst for decision-making. Another example, as with the decision on selection of best indicators to characterize social exclusion issue in order to get both (i) right social exclusion indicators, (ii) system of measurement to provide reliable data, and (iii) method for interpretation. The next type of problem is the proposed methodology to calculate, for example, threats to coastal zone which requires rather sophisticated measurements; however, taking into account Latvia's conditions these data may be obtained also by simpler methodologies. Further also division between coastal, urban, and rural territories has to be done as in the opposite case, applying only integrative indicator, the urban population changes in coastal cities are dominating those eventually important changes in rural areas. Finally, also statistical system has to be introduced in such a way as to allow us to evaluate the change of population within different distances from the coast. This task is particularly challenging currently for Latvia in the context of ongoing administrative territorial reform in order to create larger municipal units.

9.2. Sustainable Coastal Development in Latvia

As for the preparing of summary conclusions for SCD in Latvia done after indicators test calculations within EU Deduce project, we shall first recall two major factor groups to be recognized in the entire indicator system in general. One of them directly describes human activity and is comparatively well measurable, while the other one reflects different processes in the natural environment and the impact of the human activities here is recordable only indirectly, if at all. Short overview of both factor groups will emphasize only topical feature issues.

Demographical and economic development tendencies in the coastal areas of Latvia differ considerably only in some parameters when compared to those tendencies in inland territories. Mostly they are reflected as an increase of the load on coastal land, both in terms of growth intensity and also involvement of new territories into economic processes. However, the main determining spatial factor for this load growth is not only the attraction of the coast itself, but rather more the presence and rapid developments of big cities (primarily, the capital city of Riga) located in the coastal zone.

However, economic capital and social capital, particularly in rural coastal territories are not treated sufficiently due to the melodic specifications. In the economic sector we can identify the underdeveloped tourism sector in the economy of the coastal areas (outside major coastal cities). Taking into account that resort economy might be the main branch of coastal economy, its insufficient level of development leads also to weak coastal economy in general. Growth in other coastal territories has been much slower; however, it was more rapid comparing to inland territories.

As for the social capital, the unemployment level in coastal territories is lower than in inland, and tends to decrease in all territories. But once again – this tendency is mostly affected by Riga; in remote areas this situation is not that favourable. In fact, DEDUCE did not provide sufficient data on unemployment particularly in rural coastal territories. An interesting conclusion particularly for the case of Latvia is that the impact of the coast on social exclusion is quite inconsiderable.

Particular sorts of pollution either do not show signs of change or even have a tendency to slightly decrease. Activities having an impact on biodiversity are not critical, according to the indicators applied, except for one case – over fishing of cod in the Baltic Sea. Unfortunately, assessment of natural factors is not fully unequivocal due to the lack of satisfactory data. An exception is for the erosion processes, which of late has intensified in particular coastal territories.

Coastal sustainability of Latvia in terms of nature capital currently may be identified as good. The main factors for such a conclusion are based on the following. First, the coastal zone in Latvia contains many valuable areas with unique species, biodiversity, biotopes and undamaged nature. Second, part of the protected areas increased from 2000 to 2005, and at present about 1/3 of the coastal area (land 10 km buffer) is under EU protection. Climatic conditions are not favourable for the development of intensive agriculture in the coastal areas; territories of arable land are not likely to increase as well. Third, there is a high concentration and even a slight increase of semi-natural habitats in the coastal areas of Latvia (slightly higher than in inland territories).

At the same time, this present positive situation is rather hard to evaluate as fully stable; it should be assessed as good for today, but with rather high risk of vulnerability.

Deduce project indicators evaluations allow us to identify also main sectors, which might be negatively affected and they are: coastal land biodiversity; sea area biodiversity; availability of recreational territories; rights of public access to coastal territory. As the main threats to the coastal sustainability there are to be mentioned following factors. First, concentration of businesses in cities and towns increases the demand for development. Second, shortage of suitable lands for build-up may be noticeable in the coastal zone in the coming 5 – 10 years, this, in turn, will cause a risk for the transformation of previous agricultural land (which, according to the traditional low-intensity farming can be assessed as semi-natural land) and woodland into built-up land. Thus there are created risk of such factors, which is important for sustainable development: coastal biodiversity, availability of recreational territories and rights of public access to coastal territories. Fourth, general trend of growing cargo traffic flow on the roads near the coast, determined by the impact of large cities (Riga and Liepaja) and also dramatic increase in the number of privately owned cars as a coefficient factor. Fifth, port traffic loading in the Gulf of Riga has been increasing rapidly. From the point of view of sea biodiversity it is a risk, as the Gulf of Riga is a vulnerable sea territory, which is planned to be crossed by intensive cargo ship traffic.

In general, from current SCD indicators application, it can be concluded that the development of coastal territories in Latvia has a comparatively well-balanced character and environmental protection counter-pressure is comparatively adequate and helps to set limits on the negative impacts caused by the extensive coastal developments. However, existing and also eventual conflict situations, undiscovered by these particular SCD indicators, additionally should be taken into account e.g. in several „hot spots”, where protected biotopes are endangered by development activities.

Lack of representation of some conflicting processes in the SCD indicators application results are showing both the unsystematic character of some particular related indicator calculations and certain drawbacks of the whole indicator system. Also there are still not answered important SCD indicator system evaluation questions e.g.: necessary developments for integrative assessments; coastal system sustainability judgements; implications for and realization of integrated decision-making.

There are also to be mentioned two threats to the coastal sustainability assessment (top-down application) possibilities in Latvia in the future. First, it would not be possible to correctly distinguish and compare coastal administrative territories since they will be not uniform and heterogeneous due to the ongoing bottom-up based administratively-territorial reform. Second, the policy of state statistical institutions is directed towards reflection of statistical information only according to the statistical regions, which may eradicate local statistics and monitoring possibilities of several important demographic and socioeconomic parameters of the municipalities. Obviously, that raising practical interest and involvement of local coastal municipalities shall be a must for the next stage of SCD indicator system development in Latvia, of course, combining top-down approach with jointly agreed and bottom-up based SCD measurement methodology.

9.3. Indicator System Proposal for Latvia

Let us have a look how adapted indicator system is going to be stepwise developed and later used to provide necessary coastal information and also to enhance coastal communication process for national level decision making and for coastal municipalities' development in Latvia. SCD indicator system proposal elaborated for measuring coastal sustainability in Latvia is based on the one developed in the study. There are taken into account main characteristic features typical for geographical and socio-economic conditions in Latvia, spatial scale differences in sustainability evaluation measurements and, in some cases, also data availability in Latvia. Also there are defined institutions, responsible for the maintenance of and public access to data sets. The summary on the structure of indicator system is provided in the table below. System proposal distinguishes eight SCD sector goals and the development of each sector is to be measured by chosen set of 24 indicators (in total by 34 measurements): appropriate control of further development of the undeveloped coast; protect, enhance and celebrate natural and cultural diversity; promote and support a dynamic and sustainable coastal economy; ensure that beaches are clean and that coastal waters are unpolluted; reduce social exclusion and promote social cohesion in coastal communities; use natural resources wisely; recognise the threat to coastal zones posed by climate change and

ensure appropriate and ecologically responsible coastal protection; develop human resources and integrated management capacity.

Comparing to previously discussed indicator system and taking into account Deduce project test run evaluation proposals; there is the introduction of additional goal number eight. This version is developed in order to comprise several integrative indicators, which shall provide information on coastal management particularly on the efficiency of coastal communication process. This group of indicators shall be further tested and elaborated upon to reflect the following: coastal awareness among the population; state of environment and evaluation of development tendencies; state of local economy and evaluation of development tendencies; evaluation of work of municipalities; evaluation of planning. Since information necessary for this group of indicators is neither assessable from the state centralized statistics, nor activities of particular institutions, it can be acquired only directly from interviews and questioners, which is quite a time and resources consuming procedure; however, as these indicators represent slowly changing local management processes measurements shall be done not so often.

Table 1: SCD Indicators proposal

Goal	Indicator	Measurement	Proposed responsible institution for measurement	Measurement/ Sampling frequency (years)
I	1	Size and proportion of the population living in the coastal zone	Central Statistic Bureau of Latvia	5
	2	Area (percent) of built-up land (by distance from the coastline)	State agency „Latvian Environment, Geology and Meteorology Agency”	5
	3	Rate of development on previously undeveloped land		5
		New development of previously developed land	municipalities	5
	4	Volume of traffic on main coastal motorways	SJSC „Latvian State Roads”	5
	5	Proportion of agricultural land farmed intensively	State agency „Latvian Environment, Geology and Meteorology Agency”	5
II	6	Area of semi-natural habitats		5
	7	Area of protected biotopes in coastal zone	Faculty of Biology of University of Latvia	5

Goal	Indicator	Measurement	Proposed responsible institution for measurement	Measurement/ Sampling frequency (years)
III	8	Full time, part time and seasonal employment per sector	Central Statistic Bureau of Latvia & municipalities	1
		Value added per sector		1
	9	Total volume of goods handled per port	Central Statistic Bureau of Latvia	1
	10	Number of overnight stays in tourist accommodation	Central Statistic Bureau of Latvia	1
		Occupancy rate of bed places		1
	11	Ratio of overnight stays per number of residents		1
IV	12	Percent of coastal bathing waters compliant with the guide value of the European Bathing Water Directive	State agency „Public Health Agency”	1
	13	Volume of litter collected per given length of shoreline	Central Statistic Bureau & UL ESAM Department	1
	14	Average winter concentrations of nitrates and phosphates in coastal waters	Environmental Agency & Institute of Hydroecology	1
		Volume of accidental oil spills	Marine and Inland Waters	1
		Number of observed oil slicks from aerial surveillance	Administration of the State Environmental Service	1
V	16	Indices of social exclusion in coastal zone	Central Statistic Bureau	1
	17	Average household income	Central Statistic Bureau & State Revenue Service	1
		Percent of population with a higher educational qualification	Central Statistic Bureau	5
		Value of residential property	State Land Service	5
	18	Ration of first to second homes	Central Statistic Bureau & State Revenue Service	5
VI	19	State of the main fish stocks by species and sea area	State agency „Latvian Fish Resources Agency”	5
		Landings by species		1
		Value of landings by port and species		1
VII	20	Length of protected and defended coastline	Latvian Geospatial Information Agency”	10

Goal	Indicator	Measurement	Proposed responsible institution for measurement	Measurement/ Sampling frequency (years)
		Length of dynamic coastline	Environmental agency & UL Faculty of Geography	10
	21	Number of people living within “at risk” zone	Municipalities & Environmental agency & UL Faculty of Geography	10
		Value of economic assets within “at risk zone”	State Land Service & Latvian Geospatial Information Agency	10
VIII	22	Coastal awareness of population living in coastal zone	Municipalities & UL ESAM Department	3-5
	23	Assessment of state and tendencies		5-10
				5-10
	24	Assessment of coastal management		5-10

Sampling frequency is individual for each measurement, taking into account the character of the appropriate process as well as dynamics of socio-economic processes in Latvia. Many socio-economic parameters are rather stable and slow-changing in the economies with a stable character thus their observation might occur within a several year interval. In Latvia, on contrary, parameters might considerably change even within one year and insufficient observation frequency might create failures in timely identifying and evaluating of tendencies, affecting coastal sustainability.

In order to provide functioning of the mentioned indicator system proposal, collection, and aggregation of information in the necessary dimension should be provided. In many cases acquired data are of satisfying quality in both spatial and temporal terms, but access to them should be improved, to avoid specific data acquisition procedures. Information, acquired and processed by state statistics institution, is limited in terms of spatial resolution, which does not allow a comprehensive evaluation of coastal sustainable development, as it covers a wide range of essential parameters: number of population, employment, social exclusion, economic parameters, etc. Probably some of this information might be acquired directly from municipalities. Obviously, improvement of data acquisition, quality and accessibility might be provided by adopting special

Cabinet regulations, linked to the development of national integrated coastal management plan.

Taking into account existence in Latvia of only initial the stage of ICZM practice development there is need for establishing of a SCD national focal point – a structure to aggregate these data, to indicator calculations, perform their analysis and write reports and elaborate other documents and information for the needs of authorities and general public. These activities should be focused on the needs of users of this information as target customers e.g.: Ministry of Regional Development and Local Governments; Ministry of Environment; Boards of Planning regions; Municipality groups, for instance, Association of coastal municipalities (joint development projects), etc; local municipalities and municipality planners (development programmes and territorial planning); working group developing integrated coastal management plan. The great weight shall be given to the direct exchange of data with municipalities, which might be quite complicated at the moment. However, with the improvement of planning quality and integrated competence of planners, municipality information level might grow into a quite important one in the future and even replace the limited capacity of the state statistic institution. Regular consultations with data holding institutions and particularly with target customers are compulsory.

Several risks, affecting introduction of indicator system should be mentioned as well. First of all, insufficient activities of state institutions, including legislative bodies, in underassessment of impact of the coastal issue on the development of the national economy in general and coastal development planning in particular. Spatial resolution of statistic data shows the annual tendency of reduction down to five statistic regions covering the whole territory of the country, resulting in the possibility of identify processes occurring in the coastal zone and comparing them with those taking place in inland territories and general tendencies in the country.

Summary conclusions. Integrated coastal management has been recognized widely and has been actively developed in the EU, by developing international and national strategies as well as by ongoing application of the main approaches and principles agreed upon coastal practice, what is setting corresponding requirements for national/regional planning for all coastal member countries, incl. Eastern Baltic as recent

newcomers in this ICM field.. Indicator system elaborated under the frame of DEDUCE project in general was evaluated in Latvia positively. Introduction of this system will provide new information and knowledge both to local governments and national institutions responsible for coastal management.

Coastal sustainability perspective and ICM communication and indicator systems eventual developments in this region are to be further studied and at the same time developing systemic integrations of coastal sustainability. Elaborating of national/regional and local coastal case studies research prepares further practical background and also theoretical frames for renewing of ICM strategies, particularly, development of integrated coastal communication using not only, as usually traditionally perceived, diverse coastal information, but necessarily also complementary integrated it with coastal education/training, public participation/cooperation and partnership development as well as coastal environmentally friendly behaviour, what is to be mandatory done also together with sustainable coastal development indicators and their systems. Particularly important is further and innovative development of information and communication instruments at their growing variety of different types and complexities, esp. when combining them in diverse application sets, what is to be done parallel and in complementary interrelation with traditional groups of instruments as planning and infrastructure, legal and economic/financial ones. Coastal sustainability communication studies do contribute for necessary developments in the Latvia and Eastern Baltic region in both senses for theoretical frames enhancement and practical background development.

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10. Coastal Sustainability Governance and Indicator System: Local Case

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Municipal audit for integrated coastal management (ICM) development for local municipality includes analysis of stakeholders, document frame and planning process analysis, vertical governance assessment combined with sectorial analysis for all four dimensions of sustainability; nature environment, economics environment, social environment and also governance and communication dimension in Saulkrasti coastal municipality. ICM guidelines model frame were elaborated during this collaboration research project by University of Latvia performed in R&D cooperation with local authority and with involvement of all local stakeholder groups. Further on related indicator system based on these sustainability dimensions and designed ten main integrated work directions were elaborated, including 24 thematic groups with 55 indicators.

Sustainable coastal development, as widely acknowledged [1-4], has to be implemented employing integrated coastal (zone) management frame as for many years introduced and here are generic definition and additional explanation available from European Commission [1,2]. Integrated Coastal Zone Management (ICZM) is a dynamic, multi-disciplinary and iterative process to promote sustainable management of coastal zones. “Integrated” in ICZM refers to the integration of objectives and also to the integration of the many instruments needed to meet these objectives. It means integration of all relevant policy areas, sectors, and levels of administration. It means integration of the terrestrial and marine components of the target territory, in both time and space.

Also eight key principles for successful ICZM are officially delivered in 2000 [1]: broad “holistic” perspective; long term perspective; adaptive management during a gradual process; reflect local specificity; work with natural processes; participatory planning; support and involvement of all relevant administrative bodies; use of a combination of instruments.

All this has to be taken into account when planning for local level ICM as well as appropriate system of indicators [3-5,7] shall be introduced, e.g. like United Nations (UNCSD, 2001) has developed indicators for sustainable development in order to: translate physical and social science knowledge into manageable units of information that can facilitate the decision-making process; help to calibrate and measure progress towards sustainable development goals; provide early warning to prevent damage; and communicate ideas, thoughts and values.

11.1. ICM Model Frame for Local Municipality

Following are ICM development studies [6] in Latvia, particularly using Saulkrasti municipality case study research example, based on previous experiences [7,8,9] and approaches designed and implemented [10]. Description of Saulkrasti municipality in brief would include following. Geography - area 48 km², town area is 6,8 km², shoreline 17 km, 45 km from capital city of Riga, four small rivers. Demography and habitat structure – 6105 habitants (2009) in four historical parts (Pabaži, Pēterupe, Neibāde, Zvejniekciems) and almost 13 000 summer houses inhabitants in season. Entrepreneurship and factors, having impact on area development – mainly Skulte port with cargo turnover 451 thsd. tons at 2008. Tourism facilities - main resources of nature and environment are 17 km sand beaches, statutory designed nature park area “Piejūra”. The most important risks - coastal erosion, transport risks. Saulkrasti coastal municipality sustainability audit and further on ICZM guidelines were elaborated during collaboration research project by University of Latvia (with involvement of environmental management master program students - ViPa16 group) during 2009-2010 in R&D cooperation with local authority and with involvement of fall local stakeholder groups [6]. These guidelines are based on studies of legal framework, national, regional and local planning and management documents and case study research field work: seminars, interviews, questionnaires, etc. Municipal sustainability audit was performed taking into account three main sustainable development capitals - nature environment, economic environment (particularly, emphasizing tourism environment (reviewed separately, meaning the great importance for Saulkrasti municipality development), social

environment (incl. culture, health, education etc. subsectors) – as well as adding fourth important (even horizontal and cross-sectoral) capital as governance and communication. In the table 1 we can see all mentioned sustainability dimensions and, subsequently, recognized and structured frame of 10 main integrated problem areas to be seen as main work directions, as well as ICZM work sub-directions.

Table 1. Saulkrasti ICM system frame

Dimension of sustainability	Integrative problem area - directions	Work sub-directions
Nature environment	The protective zone for coastal dunes: erosion, managing, biodiversity	Permanent managing of coastal dunes protection area; Realisation of conservation for biodiversity; Supporting of collaboration and dialogue among different stakeholder groups; Corresponding construction at coastal dunes protection area; Corresponding activities for tourism and recreation
	Strategic management in public services sector	Decrease waste in nature environment; Decrease emissions of the sewages; Decrease emissions from fossil fuel from industry and public services;
Economical environment	Port complex	Further development of port aquatoria and landings; Rational, poly-functional use of port territory; Development of access roads corresponding on perspective needs
	The development planning	Social partnership, involving all stakeholder groups; Strengthening of municipal planning capacity; Elaboration of planning documents and actual amendments
Economical environment: tourism	Resources of nature, cultural history and recreation as preconditions for tourism development	Resources of nature and cultural environment for tourism development; Development of infrastructures for nature and cultural environment resources; Development of human resources; Information system and forming of the environmental awareness; Strategic planning for using of the nature and cultural environment resources
	Entrepreneurship in promotion of tourism development	Strategic planning for tourism at municipal level; Project management and development in the tourism branch; Education for tourism entrepreneurship; Marketing of the tourism

Social environment	Quality of life for inhabitants	Further development of infrastructures for the public services; Improving of the households comfort and energetic efficiency; Development of public transport and transport infrastructures; Improving of town environment quality;
	Polycentrics or existing of several centers with equivalent dominance in the municipality area	Improve and intensify the communication between spatial parts of community and inhabitants from different parts; Even up accessibility of public services in different parts of municipality; Promote tourism and entrepreneurship activities at all area of the municipality;
Governance and communication	Collaboration governance for coastal municipality	Development of collaboration among governance stakeholder groups; Development of vertical and horizontal integrative thematic collaboration; Development of tools for collaboration; Development of assessment collaboration;
	ICZM coastal communication	Develop system of co-ordination for coastal communication, Promote internal and external communication of stakeholders; Design and develop unitary space for coastal communication;

ICZM at Saulkrasti municipality can be given a look as case of good praxis and a model case for other coastal municipalities in Latvia with following recognized advantages : auditing all sustainability sectors and their interlinkage, particularly, within complex coastal territory; definition then of integrated problem areas (see, table1) as principal stage at integrated coastal planning and management process; both auditing and preparing guidelines for whole sustainable governance/management cycle; measuring coastal sustainable development with indicator method – full scale sustainability indicator system as for the first time in Latvia. Further on indicator system based on sustainability dimensions and designed 10 integrated work directions were elaborated, including 24 thematic groups with 55 indicators.

11.2. Indicator System for Coastal Management in Saulkrasti

General characteristics and structure. An indicator system for measuring coastal sustainability differs from the general case by its spatial specifics: the coastal zone is formed by a coastal line with the related set of other geospatial elements [1]. The indicator system though which coastal sustainability is assessed should therefore be able

to at least differ the coastal zone from the inland and provide a comparison, to establish the origin of impact factors on the coastal status and development trends, and to create understanding of the distribution of coastal impacts within the governance territory. Ideally, the term `coastal zone` should apply to a territory where the specific coastal impacts can be detected, and vice versa – a territory which impacts the developments on the coast and its proximity, as these impacts [10]:

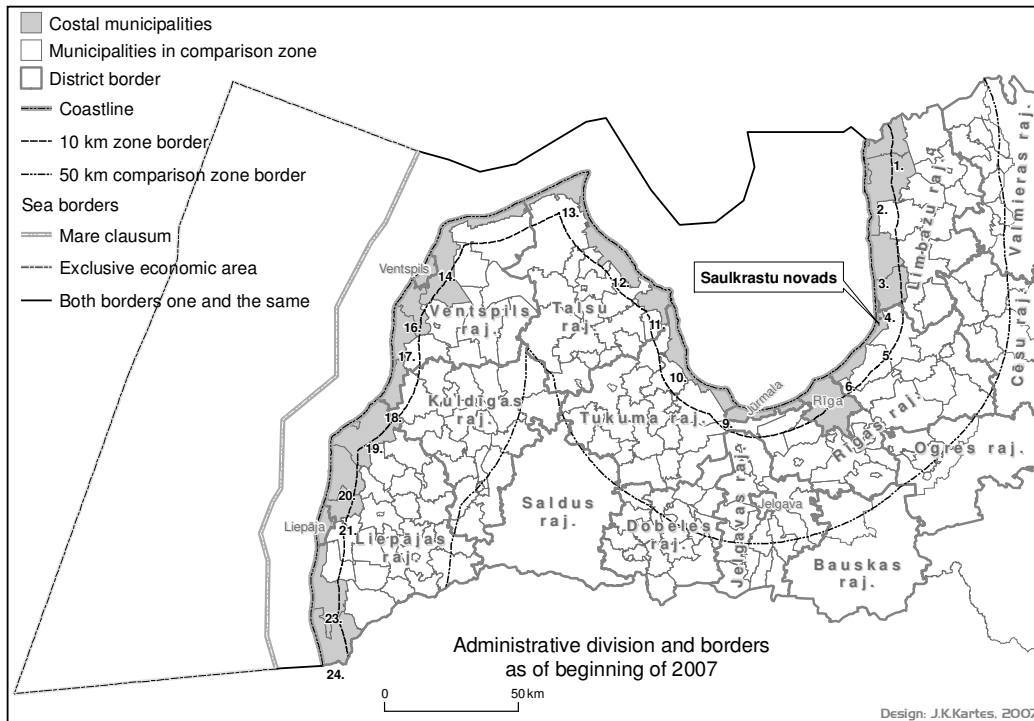


Fig.1 Saulkrasti and coasts in Latvia

may in advance be unknown precisely enough; may change over time; differ for different factors; the specifics of spatial distribution of the data used may prevent their correct differentiation. In practice, the term ‘coastal zone’ is therefore applied to a relative territory which – within a single system - may in addition be applied in a number of ways depending on the data character.

Saulkrasti county, which is comparatively small, relatively urbanised (for Latvian conditions) Baltic Sea coastal territory (Fig. 1), had the coastal integrated development guidelines elaborated for it in 2009-2010 within the University of Latvia COBWEB project [6], as the central component of municipal integrated governance. Special

attention was devoted to measuring sustainability, and for this purpose, a system of indicators was developed (see Table 2). The system was elaborated based on the analysis of four dimensions of sustainability (natural, social and economic environment, governance and communication) and integrative problem areas as defined on their points of intersection. In Saulkrasti municipality, the coast may be defined in the following ways based on the character of indicator data spatial distribution: coastal geometrical zone, which is formed as a coastal geometrical buffer; point-shaped measurement locations on the coast; coastal dune protection zone with adjacent protected biotopes; coastal 5 km-wide zone of limited economic activity, which can be adjusted depending on local geographical conditions [9,10]. For the last two, it is defined with the help of municipal spatial planning, in Saulkrasti its spatial plan is still under preparation.

The nature of data determines not only coastal definition types but also the spatial relations to the coast by indicators themselves. Here, the following cases can be distinguished [10]: special coastal indicators directly characterise some values characteristic of the coast only; coastal discernible indicators which characterise elements not directly coast and coastal relatively discernible indicators; indicators non-applicable to the coast, which characterise a factor in the overall territory. In the indicator system for Saulkrasti 18% of indicators are special coastal, 16% - coastal discernible, 32% - relatively coastal discernible and 34% has no coastal description function. It is estimated that, by improving data collection and storage quality, the proportion of coastal discernible indicators may increase. Within the small municipality extended along the coast the majority of key development factors, problems and opportunities have a directly relation to the coast.

Tab. 2. The system of sustainability indicators in Saulkrasti

Dimension of sustainability	Thematic subdivision	Indicator
I. Nature environment D	D1. Green frame status	D1.1. Cutted and restored wooden areas
		D1.2. Cutting permissions in non-wooden lands
		D1.3. Land transformation from non-developed to developed types
	D2. Potential	D2.1. Total waste amount and coastal litter

	loads on the environment from public utilities	D2.2. Satisfaction of inhabitants with waste management
		D2.3. Providing of households by centralised drinking water support and sewerage
		D2.4. Emissions from sewage treatment plants
		D2.5. Financial resources for public utilities
	D3. Air quality and climat change factors	D3.1. Using of environmental-friendly fuel at public and industrial sector
		D3.2. Emissions of greenhouse-effect gases at public and industrial sector from fossil fuel
		D3.3. Snow cover condition
	D4. Surface water quality	D4.1. Bathing water quality
	D5. Land use development	D5.1. Permissions for building
	D6. Nature risks	D6.1. Number of stormy days
		D6.2. Coastal erosion
II. Economic environment E	E1. Economically active people	E1.1. Working-age inhabitant proportion from declared inhabitants
	E2. Municipal budget	E2.1. Structure of municipality budget incomes and expensions
	E3. Traffic routes	E3.1. Proportion of hard-covered roads in all state and municipal roads and density of network of roads
		E3.2. Public transport traffic
	E4. Skulte port development	E4.1. Cargo turnover in Skulte and Salacgrīva ports
		E4.2. The ship visiting in Skulte port
		E4.3. Fishery industry characteristics
		E4.4. Investments for port development
	E5. Tourism characteristics ET	E5.1. Number of tourism services and distribution by types of them
		E5.2. Bed number in tourism accomodations
		E5.3. Bed space occupancy in tourism accomodations
		E5.4. Personel at tourism industry
		E5.5. Financial resources for Tourism information center and number of attendance
		E5.6. Environment friendly tourism accomodations
III. Social environment S	S1. Health care characteristics	S1.1. Providing by health care personnel
		S1.2. Loading for family doctors
	S2. Supporting for cultural environment	S2.1. Municipal funding for supporting of cultural heritage
		S2.2. Municipal funding for supporting of cultural events
		S2.3. Number of cultural events
	S3. Employment	S3.1. Employment and their characteristics

	and entrepreneurship	S3.2. Unemployment
	S4. Social care and social security	S4.1. Degree of social exclusion
		S4.2. Crime statistics
	S5. Education system characteristics	S5.1. Number of pupils in the “key” classes
		S5.2. Mutual payments among the municipalities
	S6. Social life quality	S6.1. Habitat comfort level
		S6.2. Public services accessibility
		S6.3. Average incomes <i>per capita</i>
IV. Governance and Communication P	P1. Activities for environment maintenance	P1.1. Number of people, involved in environment maintenance and municipal financial resources for it
	P2. Information of society about environmental events	P2.1. Publications in local mass media about environmental questions
		P2.2. Satisfaction of people by municipal communication with society
	P3. Activities in nongovernmental sector	P3.1. Local environment-oriented NGO's
		P3.2. Number of environment friendly activities, organized by all NGO's
V. Integral indicators I	I1. Number of inhabitants	I1.1. Number of declared and seasonal inhabitants
	I2. Area development index	I2.1. Area development index
	I3. Area attractiveness index	I3.1. Area attractiveness index
	I4. Opinions of population	I4.1. Opinion for municipal management
		I4.2. Opinion for environment quality
		I4.3. Opinion for coastal zone status and facilities
		I4.4. Opinion for municipal planning
		I4.5. Personal attitude and connection with sea

The integrated environmental management cycle approach applied in Saulkrasti municipality was based on municipal situation analysis in sustainability dimensions and on segmentation of priority integrative problem areas at dimension intersection points. The indicators were selected separately for characterising both the sustainability dimensions and integrative problem areas. By way of combining both resultant systems and assessing how the indicators refer to sustainability components, we divided all indicators into 4 groups [10]: sub-sectoral indicators and sectoral indicators – describe governance level-specific aspect or the whole sector of the respective sustainability

dimension; integrative indicators – describe integrative problem areas and other processes which concerns at least two sustainability dimensions; integral indicators – describe the key, more general pointers of the governed system that characterise a given governance system in its entirety and/or compared to other similar systems.

Sectorial indicators are of 20%, integral ones – 16% of the system. Others are integrative ones and almost 2/3 of them are related directly to the integrative problem areas of ICZM in Saulkrasti. Classical dimensions of sustainability are almost equally represented in the system, with the governance and communication dimensions less represented, as pointers characterising these and meeting indicator requirements are more difficult to find. The prevalence of integrative indicators in the system stems from the approach to planning itself, which is based exactly on an integrative perspective of seeing sustainability dimensions in their interactions. Separate sectors (e.g., tourism) are singled out when the related issues is significant enough for the development and welfare of the entire territory. The integral indicators also include separate indicators selected to characterise particular dimensions, as these bear a considerably larger informative load, but are overall designed to characterise resident attitudes and opinions. Their number is comparatively small; in case of a bigger proportion, there is a risk of obtaining too general information, which provides an insufficiently detailed picture for the purposes of practical action and decision-making.

System building, implementation and documentation. The building and implementation of an indicator system is a process consisting of several stages, which have now been largely completed in Saulkrasti.

First, the development of an indicator system according to the results of sectoral and integrative problem analysis took place. Indicator selection for the system was carried out in a multiple-level scheme. Initially, all proposals by experts and working groups were collected without a critical evaluation; the number of proposed potential indicators reached over 100. Then, the values were dropped which were impossible to measure. A number of parameters were rejected where it was clear that no possibility would exist to obtain the required data, or where compliance with the indicator technical requirements was insufficient. The most significant exceptions were a number of pointers that can be obtained through opinion polls or voluntary monitoring; these were included

in the indicator list won the condition that the measurements required would in future be done periodically.

Evaluation expert workshop took place in Saulkrasti (September, 2010), in which the indicator system was presented to municipality experts and the general public. This was followed by work in focus groups to evaluate the proposed system. The participants split into groups according to the interest and competence principle, with one group analysing indicators in the governance and social environments, and the other – in the economic and natural environments. Both groups concluded that the proposal is sufficient and adequately substantiated; the proposed additions were more concerned with the methodological approach in the calculation and interpretation of results. In addition, a proposal was made to apply indicators in the evaluation of sports and life-long learning events as well, which can, in fact, be included as additional parameters among existing indicators.

Summarising the conclusions of both groups, an assertion can be made that by introducing an indicator system for measuring sustainability, a municipality gets: comprehensive and well-arranged information on development and sustainability processes taking place in its territory, and an obvious comparison to its neighbours and competitors; review on the coastal processes and impacts, also in comparison to the inland part of the territory; effective instrument which allows for assessment of success in planning document implementation; forecasting instrument for planning further action, information on resident opinions and opinion changes. Indicators also serve as a powerful communication instrument in demonstrating governance effectiveness to the public and convincing the public of investments or other measures required.

Currently, the development of several indicator methodologies is in different stages of elaboration. During indicator calculations, reports are prepared for each indicator individually. This is done by using a template, the key requirements for which are indicated in the methodologies of the respective indicators. A review of the system values in general is, of course, also prepared. The review is to contain a public part as well, which might be part of the municipality's annual report. It includes fact sheets for individual indicators and the overall sustainability assessment. Indicator system's documentation, which is prepared in the implementation stage, is a relatively independent

component of the municipal development strategy. It should be arranged as a text-book consisting of brief overall description of the indicator system in the form of a table, as well as the set of indicator calculation methodologies.

In the planning practice, a number of coastal issues are regulated through national legislation; this, besides quite well keeping general public interests, however, limits planning flexibility for local government in particular local sustainability circumstances, but wide integration work possibilities still do exist. The coastal dune protection zone is in Latvia defined (generally) as a 150m-wide belt in residential areas and a 300m-wide belt beyond residential areas, in which mainly construction and other anthropogenic loads have been limited. A zone of limited economic activity is 5 km wide (in Saukrasti municipality case covering almost all territory) and has limitations for some types of industrial production, extraction of mineral deposits and placement of waste management objects.

The developed indicator system in Saulkrasti cannot be said to function with maximum efficiency yet. This is due to difficulties in obtaining information for a number of agreed indicators; parts of indicator measurements are carried out for the first time, which does not yet allow evaluating existing trends. However, when analysing the values already obtained, we have come to a number of sustainability governance characterizing aspects concerning both sectoral and integrative approach for coastal management in Saulkrasti county, which have to be further studied, discussed with all stakeholders and implemented, but complementary with established ICM framework and main work directions (see, table 1) planned:

- 1- Governance environment and communication. The coastal area is the key geographical spatial factor influencing the development of Saulkrasti, which means highest potential as well as creating significant problems at the same time. In existing municipal planning documents of Saulkrasti municipality, coastal issues have been integrated relatively poorly – in fact, only as much as is required under the national regulatory framework. This means that the coastal dune protection zone and coastal zone with limited economic activity have been established, providing for relevant activity limitations.

- 2- Natural environment. Seasonal pollution, damage inflicted by vehicles and tourism pressure in the dune zone and in other forests are of real threat. Renovation and extension of water and sewerage systems required and started as the systems currently cover the built-up areas insufficiently and are in a poor technical condition, but the level of public knowledge on the status and problems can be considered as very good.
- 3- Social environment. Symbolism of town and the whole municipality takes out significance of seashore and internal waters. Opportunities afforded by the coast are insufficiently reflected in the territory's cultural environment, except part of mass scale events during summer.
- 4- Economic environment. Business (except tourism) is relatively little affected by proximity to the sea, however, it can use it to its advantage. The key facilitating factor for business is Skulte port. It is relatively little affected by seasonality. Tourism infrastructure is not functionally closely integrated with the coast, although its activities are largely determined by proximity to the sea and seasonality. Only some tourist objects are direct coastal elements.

Aware of the drawbacks and possibilities, Saulkrasti county municipality is currently working on a new set of development documents, setting coastal impacts and opportunities as one of the key tasks. There are no coastal experts in the municipal administration, however, the importance of these issues has been duly acknowledged and their integration is consistently requested from the spatial and development planning experts involved.

Conclusions. Sustainability indicators play a vital role in the sustainability integrated planning and management model as a multiple instrument of situation analysis, prognosis and development strategy. In case of the coastal area, indicators acquire an additional importance as they allow for distinguishing and understanding coastal influences, the extent of their expansion within the territory, and the intensity of the influences in its different parts. The assessment of the spatial factor is even more effective due to the use of geographical information systems both during the indicator calculation process and as a communication instrument – to reflect the results in a form understandable not only to experts but also to the public at large and to decision-makers.

In Latvian circumstances, this sustainability governance and indicators system model approach is new both in theoretical developments and definitions as well as being local practice oriented, in fact applied in the local municipal planning practice for the first time as one of the key analysis and governance assessment and communication instruments. Saulkrasti municipality have evaluated this jointly elaborated approach and acknowledged the developed indicator system as very significant. The municipality is planning allocation of financing to the further development of the indicator system and implementation in the municipality's everyday work during spring-summer 2011, and to the training of municipal specialists in the practical use of the indicator system.

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11. Coastal Sustainability Governance for Municipalities

Raimonds Ernšteins

Here is to be described Local Agenda 21 (LA21) planning and developing process in the coastal area (Ernšteins, 2003, 2006), realized with main stakeholders involvement and establishment of the Agenda 21 Centre as intermediary actor as well as Council for Sustainable Development of North Kurzeme Coastal Region, but in general assuming to provide new participatory development and resolve stakeholders conflicting situation in the region all in all aiming towards collaborative coastal management system. All process and products development has been jointly managed by the main regional stakeholders during the EU LIFE-Environment project “Livonian Green Coastal Region - 21” (2001 – 2004) and partially continued (as pre-scribed by project application) also beyond the project term by project team (Layman’s report. EU LIFE, 2004) and involving various, however mainly project based instruments.

Subsequently, article is aiming to show the practice examples of sustainable development process and structures application in Latvia and resulting challenges. There are to be recognized following tasks: to give introduction on project to be analyzed and the territory where project was applied; to describe shortly several related case studies and to discuss sustainable development applications experience in Latvia; to describe shortly case study research method used; to draw general conclusions and confirm further SCD research and practice directions. Case study research method is integrative methodology to study particular phenomenon in the whole of its complex relationships and contexts with using complementary research instruments as document studies (incl. former project’s documentation as project proposal, questionnaires, reports, notes etc) and stakeholder’s interviews.

11.1. Collaboration Communication as Coastal Region Sustainability Innovation

North Kurzeme coastal region as per LIFE project area consisted of three local municipalities (before 2009) with a number of inhabitants just more as 10.000, but with

territory covering more as 800 km² in NW part of Latvia and situated both along the coast of the Baltic Sea and the Gulf of Riga. Specific coastal region characteristic shall include: coastline for almost 100 km and nature environment values, e.g. various nature biodiversity qualities and more as 70% of the territory covered by forests, and almost all managed by coastal Slitere national park authority; culture environment values, e.g. small fisherman villages and culture traditions by national minority population of livonians, and active participation of their associations; socio-economic aspects to be mentioned in short shall consider location of all the old and rare inhabit coastal fisherman settlements within the Slitere national park territory at the condition of decreasing man-power resources also in the whole territory of the region and also, besides fish processing plants, having not many and mostly small scale local entrepreneurship activities forestry related, also agriculture and some other businesses (only inland territories if besides tourism sector), spread in the wide territory.

Innovation for the regional and local development in the North-Kurzeme is partly based on ideas well known theoretically, but still not even today wide spread in Latvia and Eastern Europe, including also processes of participatory learning to work together. North-Kurzeme coastal region was quite well known in Latvia because of the early municipal co-operation on general matters started 1997 among several local municipalities, but there was still lacking, first of all, public participation and collaboration wider in the field among different other stakeholders in the region. There were in the area done a number of investigation projects, plans and feasibility studies, but mainly sector or issue oriented and results of the studies were poorly used, particularly not with an integrated and systemic approach.

The level of information, professional education, participation experience and management skills are very different for stakeholders involved in ICM. Main environmental communication problems seen at the both national and regional/local levels are: insufficiently coordinated and available information, also not well corresponding to the needs of different target groups; not enough developed level of public education and understanding, particularly on environmental problem solution possibilities; participatory activity of the community and other target groups shall be

enhanced as well as preconditions for realization of environmental friendly behaviour and green life style.

Appropriate environmental and sustainability communication becomes the main precondition and effective instrument for sustainable coastal development (SCD) wide understanding and integrated coastal management (ICM). The University of Latvia was involved in the project preparation to mediate and moderate LA21 starting processes and so to handle issues that concern coastal sustainability and, particularly, communication as recognized by various international projects being a common problem in the protected areas around the Baltic Sea.

11.2. Sustainable Coastal Development Approach and Practice

The very nature of the project was based on participatory governance, particularly LA21 approach as well as on collaborative communication (coastal sustainability and environmental communication) being viewed as complementary interaction of information and education/training, public participation and environmentally friendly behaviour. LA21 planning and implementation demands both ‘bottom-up’ process and also ‘top-down’ process and appropriate methods involved. The most important long-term benefit, as written in the project proposal, was hidden in the possibility to improve the motivation and change of attitude of both local community leaders and citizens in order to succeed in the sustainable development of the coastal region.

Local Agenda 21 instruments complementary package. The LIFE project proposal was prepared to create participatory governance in order to take care of the both ongoing coastal management problems as well regional development enhancement in the North Kurzeme coastal region - lack of joint understanding on coastal region development of the long coastline with diverse uses, as well as lack of institutional co-operation and stakeholders participation. The first success for coastal region development was already the project collaboration agreement itself as all local, regional and national institutions have been used to work independently. Project partnership organizations were step-wise coming to the collaboration agreement and finally included all the main stakeholders in the coastal region – first of all the local municipalities of Dundaga (as

contractor), Kolka and Roja, then Slītere National Park (SNP) and both local coastal minority culture representations - Livonian Union (NGO representing Livonian population) and Culture-historical protected territory “Livonian Coast” - as well as Institute for Environmental Science and Management (IESAM), University of Latvia as the academic and, most importantly, intermediary partner in the project. In order to work on conflict resolution and to implement the envisaged activities, there were approved Supervision Council of the project and newly by project partners legally established „North-Kurzeme Agenda – 21 Centre” (LA21 centre) as executive body to be continuing to work also after the conclusion of the LIFE project (Ernsteins, 2005).

The main coastal sustainable development tools to be mentioned are – coordination and also participation mechanisms, comprehensive coastal strategies design and policies planning, and, particularly, coastal collaborative communication. Sustainable coastal development (SCD) process has been envisaged and implemented not only via separate, even innovative, LA21 tools and activities, but as complementary whole of the following processes and products for conflict resolution and partnership practice enhancement, e.g. SCD Action program:

- 1- **participatory governance** via Round Table Forum for all general public representations from one side and the Regional Council for Sustainable Development for collaborative decision making from other side, and, especially, by development and intermediary involvement of the Coastal Region Agenda 21 Centre;
- 2- **coastal communication** via formal and informal Rural Communication Networking, as well as coastal indicators application and design and implementation of the Regional Sustainable Development Demonstration projects (Ernsteins, 2005).

All stakeholders agreed on the SCD five main work directions assigned as priorities: Green region development program; Ecotourism development program; Public relation and participation program; Coastal region education and training program and Sustainable development Demonstration sites program. Key role of permanent institution as LA 21 centre has been particularly stated and so implemented.

The LIFE project final Leyman's report has been stating (Layman's report. EU LIFE, 2004) that in order to facilitate the fulfilment of the project long term objectives and the development of LA 21 processes in the North Kurzeme coastal region there are following activities to be carried out continuously after termination of the project:

- to ensure the existence of a special intermediary organisation (LA21 centre) that would further develop LA21 as a system, tool and continuous process;
- to develop regularly new projects as main financial means for further LA21 facilitation;
- to advance public participation via Round-table Forum and its self-assigned work groups, and also, especially, to improve the co-operation with schools;
- to develop further the work of the Regional Council of the Green Coastal Region (as consultation for the LA21 Centre and co-operation with the institutions and organizations closely connected to the development of the coastal region).

Coastal communication network and platform development. Coastal collaboration communication concept elaborated was step-wise introduced during the EU LIFE-Environment project "Livonian Green Coastal Region - 21" (Ernsteins, 2005, 2006). Project was based on the interactive development of the coastal communication towards understanding and application of participatory coastal governance. Particular task was to establish background for the rural communication network, based on the very local information sharing and collaboration traditions to be coupled with all four collaboration communication dimension instruments and modern communication means and channels. In order to tackle profoundly the coastal region conflict resolution issues there were also particularly stressed local communication developments and the involvement of active citizens and all formal and non-formal citizen groups – via both everyday management and communication networking in the area and Round Table Forum and its working groups.

The main coastal communication tools in the project were developed based on both approaches – bottom-up activities facilitation for inhabitants and their interest and action groups' self-experience raising and top-down activities for collaboration communication enhancement of all four collaborative dimensions as adequate

information sharing, local region education and training orientation and implementation, coordination and participation activities and mechanisms as well as personal and professional “green behaviour” facilitation.

In order to support coastal sustainability awareness raising and active involvement to build green coastal region (as per main project long term objective) there were facilitated following coastal communication networking and platform development tools to be done not only as separate activities and/or processes, but as possible as coherent whole and complementary interacting components:

- 1- **information activities** and materials designed and appropriately spread e.g. as project newsletter and diverse media publications (more as 60), thematic coastal sustainability booklets, “On the Green Branch” as quarterly amendment to regional newspaper, web page with different information/resources data banks and all case products developed during the project etc.(LIFE project webpage, 2010);
- 2- series of formal and non-formal **education activities** and materials on seminar products/experiences as planned per project’s regional education program, including, variety of seminars/trainings for various audiences, ongoing work to establish eco-school e.g. school classes and coastal projects, eco-summer camps for regional schools, green developments experience exchange workshops locally and in the region, as well as publications as local sustainable development handbook/glossary, eco-passport and also ecotourism development manuals etc.;
- 3- **participatory activities** as individual and very local initiative groups’ self-initiatives facilitation and Round Table Forum (RTF) development and running of permanent self-development working groups for both practice oriented collaboration activities and contributing to municipal and regional planning and decision making;
- 4- **green behaviour** design and development in everyday practice of local inhabitants, professional and business activities as well as sustainability demonstration sub-projects in locally chosen sites e.g. on green building, eco-technologies, environmental friendly management of dunes etc.

Especial cooperative relation/usage with other related activities/outputs in coastal communication and sustainability in the country and abroad have been established within platform and maintained during the project time.

Community water management partnerships and communication. The following case study of the collaboration approach and also joint governance institutions developed are to be studied only for one particular public sector of the integrated management in the coastal regions - community water management - as new integration work experiences to gain and important step towards SCD in Eastern Baltics. In the 1997 within the self-designed framework of the starting inter-municipal cooperation in Latvia there were established municipal collaboration association (MCA) „North-Kurzeme“ consisting of nine local municipalities located in the NW corner of Latvia at the Baltic Sea coast. At the very next year two low-density populated coastal municipalities and two their neighbour ones established non-for-profit municipal enterprise (NME) „Ziemeļkurzeme“ in order to manage jointly drinking water supply and wastewater treatment as well as other communal services and road maintenance in this coastal region (Zakis, 2007). During this time there were gained diverse collaboration and development experiences, also related to the ICM subsectoral and cross-sectoral practices, incl. different instruments used, however the main initially designed objectives were not fully achieved. Four local municipalities mentioned in this NME “Ziemeļkurzeme” area were – Dundaga, Kolka, Targale and Ance - with a number of inhabitants less as 10.000 and more as 70% located mainly in municipality centres, but with territory stretching for almost 100 km at the coast and up to 100 km inland.

There are to be mentioned also context based problems typical for post-sowjet coastal areas (very different from inland territories, because of sowjet time history), particularly, the ownership status. Private enterprises are owners of the water facilities and selling this service to local inhabitants as parallel activity to their business, but municipalities being formally responsible authorities to organize water supply and waste water treatment within their coastal territories do have, actually very limited possibilities for it. Private owners may have problems in maintaining their often already out-dated water facilities properly and to provide services, particularly, since their main operation profile is different from water management (for example, as in most of cases, these are

fish processing companies) and even might be fixing inadequately high tariffs for their services. Solutions can be achieved by buying out water facilities from private owners or building new ones, or only by negotiations and establishing diverse agreements and/or partnerships, when achieving a compromise, satisfying all stakeholders. This process may last for several years, but agreement might be not achieved even then (Zakis, Ernsteins, 2008).

The issue of a kind of partnerships was also crucial not only for municipal centres, but other bigger villages too (often also having small fish processing workshops with water facilities, but mainly used just for business needs) and even inhabitants having their properties spread all over the coastline. Only individual solutions and/or cooperations (e.g. partnerships of the owners for the group of about a dozen of nearby properties as depending on the coastal settlement density) are their water management problem solutions.

The first success for sustainable coastal development was already agreement to start joint municipal enterprise and a number of collaboration based activities to investigate water management situation as well as other fields of their work thoroughly and to start everyday practice and various partnership projects to manage the objective. Decision making in the enterprise council were done being based on equal shares by all four municipalities, but management was realized as for any multifunctional non-for-profit enterprise. In the meantime, there were ongoing not very regulated business relations between enterprise management and separate political/elected municipal leaderships of shareholders. Enterprise administration was seeking also to establish different collaborations, networking up to formal partnerships.

For this water management sector inter-municipal integration case, there are to be mentioned actually all main coastal sustainable development instruments – legal and economic instruments, infrastructure and technical instruments, planning and institutional instruments, communication and integration instruments. Eventual and in the practice already existing examples of collaborative and institutional water management solutions, being oriented towards SCD, do require to stress applications of the following instruments and activities e.g.:

- 1- integration instruments as to integrate inter-municipal water management interests and diverse related instrument applications as well as interests of all target groups and general public, but, particularly, private owners of water facilities;
- 2- also stressing voluntary instruments within this necessary collaboration with bussiness sector (e.g. like different voluntary agreements, environmental management schemes etc);
- 3- facilitation of the individual level collaboration instruments and also even public private initiatives prepared by municipalities and /or their water management organizations for those coastal territories with low-density populated areas and small rural settlements;
- 4- communication instruments as complementary as possible and towards partnermunicipalities and inhabitants and their representation groups and organizations - information and education, participation and enviromentally friendly behaviour e.g. saving water resources and reducing wastewater etc;
- 5- and, especially and still, the project design and management instrumnts are to be mentioned, because of both - as for only real financial background establishment and also for collaborations and partnerships expanding.

Discussion. Long term objective of the LIFE project was to create the sustainable development understanding and LA21 system for the NW coastal zone of Latvia and to develop successful co-operation with similar regions around the Baltic Sea, but short term objective has been stating necessity to prepare, test and further elaborate tools to facilitate integrated and participatory planning, implementation and monitoring of North Kurzeme coastal region management. Green coastal region sustainable development action program was elaborated and coastal sustainability governance structures introduced, being based on all main stakeholders active participation, etc - all specified and foreseen by the LIFE project activities were implemented and objectives were reached even by different degree of LA21 products and processes continuity judged.

Unfortunately SCD (and ICM) long term implementation is not to be done as project-based or only municipality initiated and, subsequently, governmental (intergovernmental) support programs are to be applied. In the meantime participatory

LA21 type tools appropriately used are continuously contributing to local preparedness for SCD and ICM developments. Difficulties to explain LA21 planning process and system in easy understandable way for the local inhabitants are still influencing the result. A lot of explanations are needed to seek for more and more understandable ways of approaching local inhabitants and raising the motivation for the sustainable activities. As the most important success factors are still to be mentioned – municipal leadership decision making continuity, personal and professional preparedness and dedication of municipal employees and general public and interest groups, multilevel and cross-sectoral planning systems as well as collaboration governance culture development.

There are to be necessary mentioned also several positive LIFE project communication subtask outcomes to learn from. Coastal collaboration communication four components (information, education, involvement, behaviour change) complementary developments into local municipal practice appears to be crucial for local population/interested individuals and local experts/specialists/decision makers step wise self-experience and participatory capacity creation and further self-organized application towards sustainable coastal development.

Besides collaboration communication developments towards existing and eventual conflict resolution and LA21 process facilitation, during the project were designed and implemented the first sustainable development demonstration site's projects in the country – there is serious potential to be seen even not yet fully communicated via this project. As the most important success factors for coastal communication process successful continuation shall be mentioned practice based and so oriented communication models development, as well as traditionally, human resource and institutional capacities, but in combination with self-experience development of very local actors.

One more example of coastal communication practice is to be mentioned now here is being based on local school and municipality collaboration. The long term objective for LIFE project supported and enhanced school & outreach environmental education (EE) strategy development was to facilitate development of local human resource capacities and municipal SCD understanding, and also to combine this potential with other local/regional stakeholder development processes in order to enhance

eventually the whole spectrum of social partnerships necessary for participatory ICM in the coastal area.

At the end of the century University of Latvia was involved in the North Kurzeme coastal region municipal collaboration R&D projects and subsequently initiated the Kolka school sustainability (LA21 audit approach) assessment in the 2000 and together with teachers and outside stakeholders prepared necessary LA21 program guidelines, incl. long term strategy for school contribution to municipal SCD. Afterwards school approved EE development plan and successfully started it step wise implementation. Most importantly, in the 2002 school was assigned to participate in the EU LIFE project “Livonian Green Coastal Region 21”. During this project expanded not only inside, but also, particularly, outside EE development of the Kolka school e.g. teachers, management and especially also pupils were taking part into preparation, conducting and also reporting to the public and decision makers of the first coastal region public understanding survey, design and test run of first ecotourism bike route as well as eco-camps etc designed spin-off projects, incl. preparation of the individual coastal region citizen eco-pass and sustainability demo projects etc. This particular for Kolka school time bond objective to get firsthand experience of vertical and horizontal SCD integration management projects locally and in the whole coastal region was that necessary outside facilitated kick-off for next stage school & outreach EE development towards eco-school green flag standard achievement.

As to the next case studied - the establishment of the non-for-profit municipal enterprise „Ziemeļkurzeme“ – the partnership project was aiming to create joint management institutions and new subregional capacities for comprehensive and modern instruments based development of municipal infrastructure and public service sectors. “Ziemeļkurzeme” (time frame includes 1997-2009) was a multifunctional enterprise established to manage not only drinking water supply and wastewater treatment, but also other communal services and road maintenance for all four shareholder municipalities, what, in the case of not satisfactory municipal financing and very different service related incomes per each of diverse municipal management function fields assigned to their work, was the reason for instabilities in business process and very limited developments.

Also just one sector for the ICM, e.g. water management sector long term development, requires all kind of collaboration practice and is to be enhanced by all possible means, incl. public private partnerships as well (as in the case of private fish processing enterprises having ownership of local water facilities). Now there are realized administrative – territorial reform in the country being in the preparation since 1999 till 2009 and even some results were unpredictable one can recognize important contribution towards eventual integrated water management and even ICM approaches might be more realistic and implemented as in many cases not only 3-5 former local municipalities, but often 7-10 ones, are joint together as new local municipality.

Conclusions. The LIFE project proposal was prepared to facilitate inter-municipal participatory governance system in order to take care of the ongoing coastal management problems in the North Kurzeme coastal region, being particularly threatened by the lack of institutional co-operation and stakeholders' participation. All coastal collaboration communication and governance activities, specified and foreseen by the LIFE project, were implemented and general objectives were reached, however with different degree of effectiveness judged, particularly when approaching long term impacts and comprehensive communication process continuity after the project finish. LA21 centre as planned per initial project proposal have been legally established and have had prepared portfolio of pre-designed new projects to be implemented after LIFE project termination. Continuity of the sustainability activities after the project termination is the main issue if the project implementation has been not rooted into the municipal every days practice deeply enough. The importance of the all stakeholder's participatory involvement and shared "project ownership" is to be obviously re-affirmed, but complementarily with sustainability collaboration communication implementation before, during and after project. There were various spin-off developments and also particular formation of initiative groups and project's designed and implemented even beyond all planned project outcomes.

The case studies approves positive experience of the joint inter-municipal development and also supports diverse application of the non-for-profit municipal enterprises and related tools to manage different public sectors, particularly, water management sector, for coastal region stakeholders sustainable development practice as

an approach and instrument for ICM step wise integration applicability. There were confirmed especially applicability of the LA21 system and tools for coastal region stakeholder's conflict resolution and sustainable development practice cases in Latvia and further a field. As the most important precondition for SCD and ICM enhancement in coastal regions has been recognized coastal communication development to be seen as complex application and implementation of four components of the collaborative communication based on complementary interaction of coastal information and education/training, coastal participation and environmentally friendly behavior. Participatory governance especially in the combination with collaborative communication are the tools really in the game.

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12. Coastal Friendly Behavior: Municipal Planning and Households.

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12.1. Municipal Climate Change Adaptation

Department of Environmental Management (DEM), in the spring 2001 performed collaboration research project on municipal level climate change adaptation in partnership with Salacgriva County Municipality. The Department of Environmental Management (DEM), in the spring 2001 performed collaboration research project on municipal level climate change adaptation in partnership with Salacgriva County Municipality and the North Vidzeme Biosphere Reserve. Project was realized by case study research methodology, (including field studies in this coastal region) with the aim of performing an interdisciplinary situation audit on the local climate change adaptation policy existing practice conditions and development possibilities, as well as, to draft, as a result, relevant policy planning guidelines. This was done as contribution for start-up of the EU project „Climate Change: Impact, Costs and Adaptation in the Baltic Sea region” (BaltCICA) in the Salacgriva municipality. The drafted guidelines were based on the key elements of the 4P environmental management (incl. communication) cycle: – problem analysis, – policy formulation, – policy planning, – programming. The cycle contains the following key components: starting with crossectorial and vertical thematic and management audit, target group’s assessment; policy values and intentions, aim and principles; planning preconditions; objectives, instruments and indicators; implementation and review resource basis.

There are to be seen various national and also regional and local climate change adaptation strategies especially in the EU Nordic region. For example, in the Danish strategy for adaptation to a changing climate we can see main individual sectors recognized as priority for action: coastal management, (dikes, ports etc.); buildings and infrastructure; water supply; energy supply; agriculture and forestry; fisheries; nature management; land use planning; health; rescue preparedness; insurance aspects (2008). In the regional climate strategy of region Zealand we can see the following individual

sectors for action to be planned now: the regional energy system; agriculture; industry and technology; transport; towns and buildings; open land; health care and emergency management; management of internal business (2009).

The situation assessment in the Salacgriva municipality as for the first municipal case in Latvia was carried out in each of the three pillars of sustainable development – i.e., natural environment, social environment and economic environment, with an additional separate area called the governance environment, which is to be considered the unifying horizontal element encircling all the three SD pillars. Within the governance environment, both internal and external communication is including environmental and climate change communication, particularly essential. In the governance environment assessment process, collaboration communication model (R. Ernsteins, 1999) was applied, which contains four key components - environmental information, environmental education, public participation and environmentally friendly behavior – and embraces all key actor groups - local inhabitants, municipal and state institutions, business sector as well as mediators, NGOs and the media, educators and experts.

Collaboration project between the DEM and Salacgriva municipality concluded with elaboration of the climate change adaptation policy planning guidelines for Salacgriva district as coastal municipality. The main work directions should be done in the following sectors: **Nature environment sector** – biodiversity; water resources and waste management; coastal protection and development; **Economic environment sector** – energy management and industry development; agriculture, forestry, fishery management and tourism development as well as, transport and infrastructure; **Social environment sector** – inhabitant's life quality; human resource adaptive capacity; **Municipal governance and communication sector** – governance system and process adaptation; environmental and climate change adaptation communication development.

Of particular importance should be mentioned last sector – including important further importance for the development of participatory governance and especially also climate change communication work direction. The climate change communication system (basically, but not only along the same work directions as environmental communication) that would ensure all communication needs to be planned strategically, to be co-ordinated, systemically integrative, proactive and interactive, and human-

oriented. Climate change (environmental) communication needs to be included into municipal planning documents and process (and products) both through **disciplinary and integrated approaches**, and tailored to the working specifics of specific target groups. When implementing the communication activities, the first steps would be to work on understanding development and above all – provide opportunities for climate change communication target groups to realise their roles and self-organise as well. Also a transparent and long-term co-operation mechanism needs to be established among the municipal administrative structures and the other target groups, especially mediators (media, NGO's, educators and experts), which would involve all present and future co-operation partners (target groups) into climate change adaptation problem-solving processes.

Importantly also should be mentioned recommendation done for Salacgriva municipality to consider employment of the still new for Latvia but eventually influential municipal environmental management instrument – environmental (green) declaration as formal municipal green work pledging as well as green public relations introduction. Salacgriva municipality has been working on this initiative and in August 2010 the Council of the municipality has approved the **Declaration of the Green Region** – a guideline manifest for public and target groups' involvement towards environmentally friendly municipal management.

Declaration on the Green Municipality. By confirming the Declaration on the Green Municipality, we are willing:

1. To promote "green" thinking;
2. To ensure sustainable and healthy maintenance of urban environment by developing and implementing environmental policy plans;
3. To ensure appropriate special protection areas' management;
4. To provide quality drinking water to residents, to provide wastewater collection and treatment;
5. To ensure facilitated beaches according to Th Blue Flag requirements;
6. To sort household waste;
7. To promote green public procurement;

8. To create an informative section in municipality's web site on possible eco-technology solutions for environmental issues that would also serve as a platform for exchanging experience and practical advice;
9. To promote use of healthy, environmentally friendly products and services;
10. To promote environmentally friendly and efficient use of energy resources;
11. To promote green transport (cycling and water transport) by creating the necessary infrastructure for its development;
12. To promote environmentally friendly tourism development;
13. To support environmental education by promoting natural science learning in schools;
14. To involve residents in environmental campaigns, environment cleanup, and environmental education activities.

By implementing the Declaration targets, drawing up development strategies, programs and other documents we pledge to comply with the principles of sagacity - not to create complicated bureaucratic conditions but simple, alive and understandable idea or action plan that is accessible for every resident and in which everyone can participate.

Different manifestations of climate change are already observable also in Salacgriva municipality including more frequent storms and floods that cause real loss both to nature and economics. However, if tackled correctly, the challenge of climate change can give a municipality a number of possibilities for innovation and development.

Salacgriva municipality: synergy from green energy projects

- Local municipalities' energy system is basis for its sustainable development. The heating system in Salacgriva is already based on renewable recourses and is moving towards reducing the use of fossil fuel even more to ensure independent and stable power supply. That is to be achieved with the help of sea heat pumps and use of biomass in power supply.

Municipality has also introduced innovative solution for street lighting by equipping children playground with hybrid (wind and solar energy) electricity generating lighting lamps.

- North Vidzeme Biosphere Reserve that plays the role of innovation catalyst in Salacgriva, choose to use solar energy and ground heat pumps in Environmental education and information centre in Salacgriva.
- Local entrepreneurs are main executors of green energy projects as well as initiators in many cases. Good example of renewable resource use is wind generators in Ainazi village and recreation centre “Kapteņa osta” that uses heat pumps and has environmentally friendly business model.

All the green energy projects mentioned above serve as basis for development of environmentally friendly municipality image.

From green energy to Green municipality: aspects of environmental public relations. In summer 2010 Salacgriva municipality officially announced its orientation towards image of Green municipality by issuing The Declaration on Green municipality. It confirms local administration’s willingness to promote accessibility to environmental information, develop environmental education, encourage public participation in environmental issues, implement environmentally friendly behavior etc. This is an essential turning-point for municipality as it has chosen to base its development on the concept of Green municipality.

In this context environmental public relations have great significance as an element of climate change adaptation policy and a tool to create the Green municipality image. Coordinated and integrated PR strategy for environmental and climate change adaptation is essential to create long-term, mutually beneficial relations between the local administration and the key target audiences. Effectively planned PR involves in decision making process to make sure they correspond the mutually beneficial relations and intended image.

Conclusions and suggestions. Environmental PR can serve as a powerful tool for sustainable development in municipality by creating environmentally friendly municipality image that both encourages environmentally friendly behavior and promotes citizens’ loyalty as well as contributes to growth of tourism and investment.

A necessary component of environmental PR is environmentally friendly behavior, and local administration should therefore serve as an example of introducing environmentally friendly behavior into everyday actions. Besides, administration should

start to play the role of mediator by involving target groups in the process of climate change adaptation policy planning. Former environmentally friendly initiatives from different target groups should be used as basis for environmental PR transforming separate actions into development of Green municipality.

Household environmental management (HEM) is one of the six environmental management dimensions. HEM focusses on household sustainable consumption promotion and introduces the actual state of household sustainable consumption development in Latvia. The chapter describes HEM structure, sectors and main activities for sustainable development in each sector and presents a summarized expanded analysis of HEM spatial sectors according to EEA Housing and Building cluster structure.

First, background information – the need for sustainable consumption - needs to be evaluated:

- Politics. Promoting society sustainable consumption is one of the main priorities of global and European Union long-term development. The need for society consumption change was first mentioned in Agenda 21; it is one of the main targets in the Johannesburg strategy of 2002. The Marrakech process in 2003 was launched to promote production and consumption changes. At the national level, Latvia's long-term Sustainable Development Strategy 2030 provides for household level sustainable lifestyle practices.
- Ecological footprint measures. 3.6 ha per resident in Latvia; globally available: 1.8 ha/res. 18% is housing.
- Household impact on climate change. 37% of household-produced greenhouse gases are from housing.
- Housing cluster assessment shows us the following picture:
 - Housing energy consumption on average in Latvia is comparatively high - 308 kWh/m².
 - Most of the energy (78.8%) is used for space heating purposes, the rest - for water heating, cooking and electrical appliances.
 - There is on average 25.5 m² living space per capita in Latvia (*Construction, Energy and Housing State Agency, 2008*)

- Most of the energy for space heating comes from district heating, but decentralized heating systems running on fuel wood, natural gas and solid and liquid fossil fuel are also widespread.
- Households now use electricity not only for lighting and some basic electrical appliances, but also for cooling (and in some cases heating), and increasingly for cooking and entertainment. (*Brizga, Kudrenickis 2009*)
- Over the last years, measures have been developed for increasing building energy efficiency (heat insulation), but after heat insulation is installed, residents often choose to increase the indoor temperature;
- Increasing amounts of domestic waste and hazardous waste
- Household environmental management is environmental management of a dwelling (private house, apartment) and its surroundings either individually or jointly by the residents of a specific territory, which includes sustainable housing and lifestyle practice in sectors such as building; energy supply and consumption; water supply and consumption; food and other domestic goods and services consumption; waste management; compliance with environmental health requirements, etc.

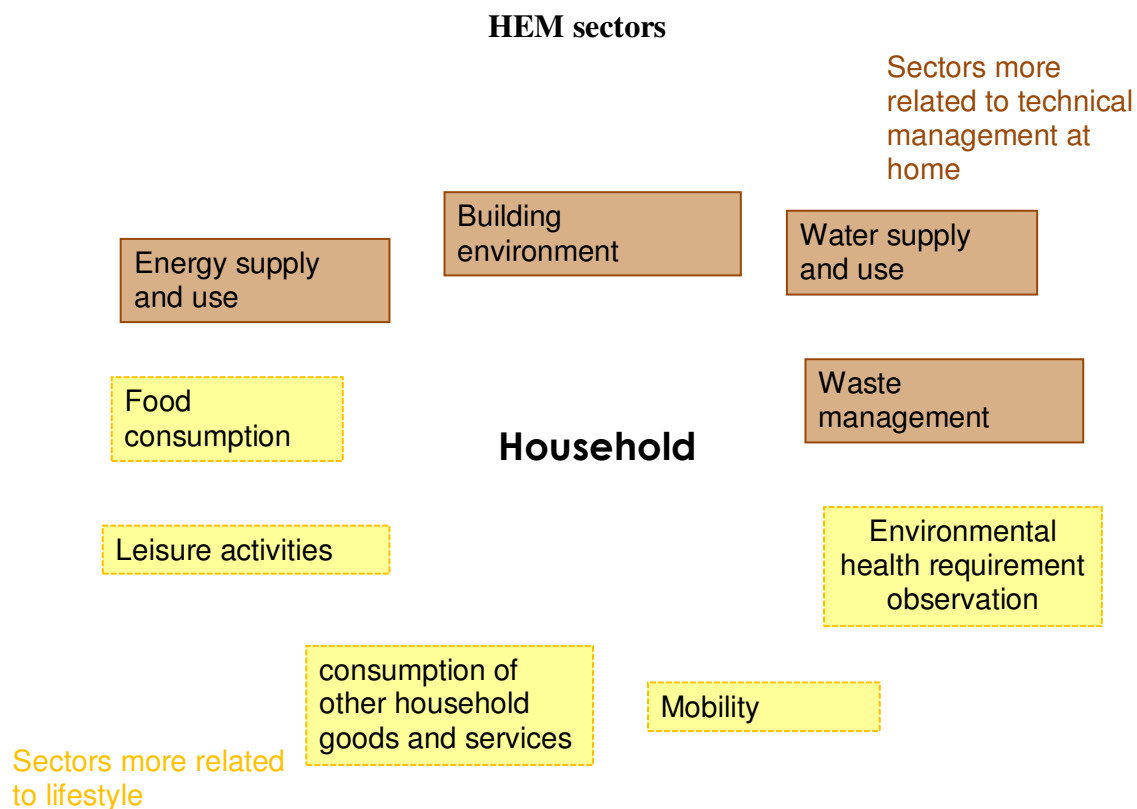
12.2. Household environmental management definition and hypothesis

Household environmental management (HEM) has been studied with a systemic approach, by defining the management structure and involving main actors responsible for promoting sustainable consumption in general. In line with this, the HEM structure – with thematic sectors such as (building, energy supply and consumption, water supply and consumption, food and other domestic goods and services consumption as well as waste management and compliance with environmental health requirements) has been defined and structure for these sectors and interaction between them have been formulated.

Household environmental management is environmental management of a dwelling (private house, apartment) and its surroundings either individually or jointly by the residents of a specific territory, including environmentally friendly:

- Action in building environment,
- Energy supply and use
- Water supply and use
- Food and other everyday products, goods or services consumption
- Waste management
- Observation of environmental health requirements, and
- Mobility
- Leisure activities.

HEM includes the entire **environmental management cycle** from situation assessment and environmental policy development to solutions planning and action programming for practical activities in the management of a dwelling and its internal and external environment.



HEM sectors are as follows as per sector division according to EEA consumption cluster: Housing un Building and a full housing life cycle (construction phase; use phase

(energy consumption for heating, cooling, lighting, as well as water and other resource consumption, etc.); demolition phase (European Commission 2006)); food and mobility (ETC SCP).

There are six traditional environmental management dimensions – international, state, municipal, mediative, corporative and household. In this research, the author has studied three main environmental management dimensions (actors) – **state, municipal and household** – focussing on how they need to develop and interact with each other to promote the sustainable consumption of the household sector. At the outset of the study, the following hypothesis was put forward:

Household environmental management has to be developed with a systemic approach based on the set of four complementary approaches:

- State government strategic and sector/instrument integrative frame approach
- Municipal action development: planning and promoting implementation of sustainable consumption policy
- Household proactive self-initiative in household environmental management;
- Application of the collaboration management model.

For each of these theses, sub-theses have also been drafted explaining each framework more specifically.

1. State government strategic and sector/instrument integrative framework approach:

- the state provides external preconditions for household sustainable building, energy, water consumption, waste management,
- promote household awareness, education and participation in sustainable consumption as well as sustainable lifestyle practice.

2. Municipal action development: planning and promoting implementation of sustainable consumption policy:

- promote sustainable service supply for households and provide self-sustainable consumption and best practice demonstration
- provide availability of support instruments for households and transparent government with household participation.

3. Household proactive self-initiative in household environmental management:

- claim and control availability of public instruments and communication for sustainable consumption;
- practice proactive sustainable consumption, collaborate and communicate with other households and local target groups about related experience

4. Application of the collaboration management model:

- the environmental management processes of the main target groups (state government, municipalities and households) are based on target group and sector integration, instrument integration, audit and self- assessment.
- corporate target groups, especially with mediator target group involvement, provide environmental communication development.

Methodology. In literature review, international, regional (European Union) and national political planning documents as well as academic literatures, scientific publications and other sources have been studied. To establish the hypothesis, four different case studies, interviews with experts and expert inquiry have been done within the empirical study. Inquiry (30 resp.) and expert interviews (aprox. 40) included questions relating to the respondent's viewpoint about sustainable consumption development framework; evaluation of the actual state in HEM sectors; evaluation and viewpoint about the need of collaboration in HEM context. The following four case studies were done:

1. Collaboration Management Model approbation in Saulkrasti county - a study and an action plan for Saulkrasti municipality management environment development have been drafted.
2. Local government and household action development in Valmiera municipality – practical example how household management processes take place in a specific Latvian municipality
3. Local government good practice example: study in Kronsberg. Hannover municipality experience has been studied; building sustainable city Kronsberg for EXPO 2000 exhibition.
4. Household self-initiative and environmentally friendly action – observation of factors that impact informed household for environmentally friendly action in a city environment.

Results. The study provided no evidence as to how household sustainable consumption has to be promoted. Four different case studies and the inquiry generally confirmed the hypothesis. All actors need to act, but there is no consensus among the inquiry respondents on the one hand and expert opinions on the other as to who should have to act more pro-actively.

In interviews, municipal experts answered that the state government should be the first to act by drafting a strategy and establishing support instruments, whereas the central government representatives (ministry experts) said that *this is the responsibility of local governments*. The respondents marked the answer that households should participate more actively in public processes. The case studies also confirmed the subthesis.

Table 1: Case study research results

CSR 1: Saulkrasti	showed that Collaboration Management Model approach could be appropriate for action development in each of the three main sectors (state, municipality, household)
CSR 2: Valmiera	<ul style="list-style-type: none"> showed that for municipality initiative development, there is a need for external preconditions coming from state governmental level (e.g. legislation for green procurement procedure) and development of household public activity development of household initiatives in heat insulation should be supported with communication for energy saving between all involved actors
CSR 3: Kronsberg	showed that to achieve sustainable development, there is a need for weak and strong sustainability balance; Households should participate in public processes and be interested in local development.
CSR 4: Household	showed that informed action development is not possible due to external obstacles in city environment as well as household internal obstacles, such as neighbour attitude and financial aspects.

This research overall confirmed the hypothesis – household sustainable consumption have to be developed with a systemic approach –state government, municipalities, households are all interlinked and have to act in one system. In environmental communication processes, the mediator sector (media, educational institutions, non-governmental organizations) and corporate sector have to be involved as well. It means that the hypothesis could be an approach of how to systemically promote household sustainable consumption.

In this research, action development in the state government, municipal and household sectors has been the focal point of analysis. But from the other hand, activities in these sectors are influenced by international, mediator and corporate sectors as well. There are other ways that need to be studied in order to establish a systemic framework for better understanding of the processes that affect sustainable development within the society.

12.3. Household environmental management applications for Latvia

The Environmental Footprint (EF) measures and household GHG emissions data show the need for household sustainable consumption (HSC) in Latvia. The main household consumption clusters with the highest impact on environment are housing, transport and food. Housing cluster subsectors in household environmental management (HEM) are - Building environment; Energy supply and use; Water supply and use; Waste management; Lifestyle as integrative and the HEM examples in Latvia showed that there are many obstacles in three main environmental vertical levels (national, municipality and household) for HSC promotion in housing sub-sectors. Without a relevant national legislation and national strategy in place for SC development, the municipalities alone are rather weak in initiative implementation capacity.

The obstacle factors at the household level are related to unavailable infrastructure, information, and prices in the external household environment as well as internal factors – habits, knowledge, values. The households that are informed of sustainable consumption practice are dependent on many other actors, such as centralized service companies, waste management companies, entrepreneurs, neighborhood for sustainable consumption realization. Collaboration development among involved actors could promote HSC development – expert-directed collaboration among households is one of urgent factors, the Idea Action example showed the success in practice. For HSC development, many communication instruments are used, but mostly by mediators. Municipal representatives argued for the need for household interest increase and participation in planning and decision-making processes for municipal action

development. The above arguments all serve to confirmed the need for systemic and well - balanced development at every level.

A systemic approach for household sustainable development needs to be promoted in:

- Development of environmental management dimensions:
 - Public institutions need to ensure external preconditions for environmentally friendly behavior and promoting internal household action and development of environmental awareness;
 - Municipal institutions – when implementing SD promotion policy – ensure sustainable services, municipal infrastructure, communication with residents and show good example;
 - -Households implement and demand sustainable consumption in public environment;
 - Every level of governance - vertical and horizontal co-operation, incl. involving corporate and mediator dimensions of environmental management.
- HEM thematic sector development:
 - Ensure HEM integration into every environmental management sector;
 - Taking into account mutual sector integration in sustainable development;
 - Complementary use of available instruments.

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13. Collaboration communication – public involvement and participation

13.1. Coastal communication practice cases in Latvia

The total of 40 best practice examples in coastal environmental communication have been identified, and 38 presentations have been produced.

All of the selected coastal environmental communication best practice examples will be compiled and included in a single informative and study material, which will be available to all interested parties both electronically and in the written form.

Coastal environmental communication –Best practice cases - I

	Best practice case	Comments
ENVIRONMENTAL INFORMATION		
1.	Nature House in Pape Nature Park as a multifunctional information centre	Established in 2001, closed in 2007
2.	The Blue Flag - informative work with the public	Environmental information through Blue Flag activities (Liepaja City Council)
3.	Livi culture centre in Kolka	Aim – popularise local coastal culture and traditional lifestyle
4.	Energy labelling of buildings as municipal environmental communication instrument	
5.	Communication with the public in Roja county	Roja Tourist Information Centre
6.	Environmental interpretation movement in North Kurzeme coastal region	North Kurzeme Information Centre
7.	Geopark establishment in North Vidzeme coastal region	NGO North Vidzeme Geopark initiative

Coastal environmental communication –Best practice cases - II

ENVIRONMENTAL EDUCATION		
1.	Liepaja Ezerkrasta Primary School – coastal eco-school example	
2.	Environmental inspector – a punisher or an educator?	Educational work by Liepaja Regional Environmental Board
3.	The Blue Flag movement stakeholder co-operation and environmental education facilitator	
4.	Kolka Primary School - coastal eco-school example	
5.	Environmental education in Slītere National park	
6.	Environmental Education and Information Centre at North Vidzeme Biosphere Reserve	Construction in progress

Coastal environmental communication –Best practice cases - III

PUBLIC PARTICIPATION		
1.	Pavilosta grey dune – public participation initiative best practice	
2.	Public initiative against construction works on Saka River bank	
3.	Environmental NGO initiatives and interest group co-operation for coastal dune protection at local and national levels	
4.	Public hearing of Zirņu Street planning in Liepaja: information and public participation facilitation case	Liepaja City Council – active public involvement case
5.	Municipal environmental licencing system in Ventspils as an environmental communication instrument	
6.	Voluntary monitoring in North Vidzeme Biosphere Reserve	
7.	Environmental education in Ainazi Primary School	Ainazi ecology hobby group activities

Coastal environmental communication –Best practice cases - IV

ENVIRONMENTALLY FRIENDLY ACTION		
1.	Initiative „Countryside in the city”	NGO „Liepaja optimists society”
2.	Biological agriculture: best practice in coastal environmental communication	
3.	Green energy in a coastal municipality on its way to Green County status: Salacgriva case	
4.	Environmentally friendly household in Dundaga county coastal villages	Research into coastal household best practice
5.	Environmental House in Liepaja established by NGO „Radi vidi pats”	Promotion of environmental and cultural awareness through youth initiative and voluntary work
6.	Sustainable forest management demonstration territories as an environmental communication instrument. „Kraukli” household	
7.	Sea and wind energy utilisation in Salacgriva municipal energy provision	
8.	Kapteini port as environmentally friendly behaviour in coastal zone	

Coastal environmental communication –Best practice cases - V

INTEGRATIVE ENVIRONMENTAL COMMUNICATION		
1.	Environmental communication integration into municipal environmental management	
2.	Environmental communication tools and instruments in Ventspils municipality	
3.	Coastal sustainable development indicators in municipal governance planning – best practice examples	
4.	Public relations in national environmental actions	
5.	Environmental marketing best practice examples in Latvian coastal areas	
6.	Coastal environmental communication and environmental	Environmental interpretor activities in North Vidzeme Biosphere Reserve

	interpreters	
7.	Coastal municipal environmental communication in waste management sector – North Vidzeme Waste Management Organisation (ZAAO) best practice case	
8.	Coastal territory communication in renewable energy resource sector	

Coastal environmental communication –Best practice cases - VI

ENVIRONMENTAL CO-OPERATION		
1.	NGO „North Kurzeme coast” – local resident interest lobby in Slitere National Park	co-operation among local residents and national park authorities
2.	Kolka Cape – a unique national and international ecotourism centre	
3.	Libiesi cultural heritage – prospects for co-operation	
4.	Communication in Kemer National park – various solutions for various target groups	Nature school for schoolchildren Seminars & gatherings for local residents etc.

13.2. Strategic Environmental Assessment as a Participation Tool

One of the key elements of strategic environmental assessment (SEA) is a communication between decision makers, environmental experts and inhabitants. The importance of communication appears through several elements. First, NGOs and public is invited to comment and provide opinion on the draft Environmental report and proposed measures for mitigation of likely adverse environmental impacts. Secondly, environmental experts who do the SEA need to inform and explain the planning authority about the need to introduce certain changes to the planning document in order to avoid or minimize adverse environmental impacts that may potentially arise as a result of implementing respective planning document. Third, public opinion and participation potentially can play important role due to the very nature of SEA that has a character of set of recommendations only that are proposed to decision making body.

Implementation of SEA started in July of 2004 when the Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (usually referred as SEA Directive) became effective. In Latvia the requirements of SEA Directive are transposed into Act on Environmental Impact Assessment and Cabinet of Ministers Regulations No 157 of 23 March 2004 “Procedures for strategic environmental impact assessment” that describe the procedures of SEA and define competences and responsibilities of all involved parties. The implementation history of SEA in Latvia is rather short and the good praxis is still in a formative stage. By looking at three different cases where SEA has been applied to the land-use planning for the coastal areas, this paper aims to draw conclusions about the role of communication, key driving forces, factors and tools that are crucial for success.

Short description of good practice. NGOs have played crucial role during early stages (2004-2005) of implementation of SEA when many public authorities were not familiar with the SEA. Best practice is related to the capacity of NGOs and civil society groups to participate in SEA process and to highlight SEA as an important tool for integrating environmental concerns within planning as such. In following chapters each of the three cases is described in detailed way.

SEA for Riga City development plan for 2006-2018 attracted remarkable attention from several environmental NGOs. Among them the most active was “Coalition for preservation of natural and cultural heritage” (Coalition) – the NGOs that focuses its activities on the prevention of negative impacts to the environment and quality of life caused by economic activities of Riga Freeport. The Coalition maintains close links with the local inhabitants from Bolderaja and Daugavgriva suburbs of Riga, as well as it cooperates with other local and national NGOs that focus their activities on similar issues.

General land-use planning for the area of Riga Freeport was done within the frame of developing new land-use plan for the Riga City. The elaboration of the plan started in late 2004 and the SEA was started in 2005. After getting acquainted with the draft plan that was published in early 2005, the Coalition put efforts to learn about SEA process and it’s role in the land-use planning. Main concerns of the NGO were about

likely negative impacts on areas that are included in the Natura 2000 network, on several other valuable nature areas that are located in the area of Riga Freeport, and likely impacts on environmental health (including air quality, odours, noise), especially in Kundzinsala, Daugavgriva and Bolderaja. The Coalition participated in public hearings organized within public consultation process on the draft of Riga city development plan, submitted written comments and approached Environmental State Bureau, as well as Ministry of Environment asking to pay more attention and assess likely impacts on several nature areas. Crucial role of this NGO was also in increasing awareness of other stakeholders both about planning and SEA processes and promoting their participation. In relation to that several workshops and stakeholder meetings were held where local inhabitants from these suburbs discussed the issues with mayor of Riga and the heads of departments. Moreover the NGO also cooperated with media – writing articles and comments, sending press releases, and providing opinion about impacts caused by Riga Freeport. Media attention helped to bring issues to the public and forced also environmental institutions to pay more attention when assessing environmental impacts. As a result active public involvement, the Environmental report prepared with SEA process contained several references to the opinion of NGO and put forward a set of recommendations how to avoid or mitigate adverse environmental impacts.

Active public participation was crucial and provided input for protection of nature values in Saka. Draft territorial plan for 2006-2018 of Saka region contained proposal to establish a new village “Akmensrags” just next to the borders of nature restricted area “Ziemepe”. The NGO was also critical about some other proposals about planned improvements in tourism infrastructure and creation of new trails for tourists. Local environmental NGO based in Pavilosta and being part of Friends of the Earth Latvia has followed the elaboration of the planning document from the very early stage and also got involved in the SEA process trying to use it in order to argue against proposals included in the territorial plan. The local action group communicated about environmental aspects also to the Environmental Advisory Council that unites 19 environmental NGOs. When the public consultation process started on draft Environmental report that was prepared within SEA process, the local NGO acting on behalf of Friends of the Earth Latvia took part in the public hearing and submitted written comments supporting the conclusions of

SEA and asking to provide more detailed description of baseline scenario and assess several other likely impacts that might be caused through increased construction activities. Environment Advisory Council supported their position and submitted similar comments to the environmental experts working on SEA. Public participation resulted in the fact that some of the comments have been incorporated into the Environmental report. Based on this report where likely adverse impacts on Ziemupe nature restricted area have been identified, the Environment State Bureau concluded in its evaluation that the planning document would most likely cause significant adverse impacts on nature restricted areas and asked municipality to change the planning document. Though according to SEA legislation the request of Environmental State Bureau was not legally binding, the municipality changed the planning document and cancelled the proposal about establishment of new village. Key success factors were the good quality work done by SEA experts who justified their conclusions with proper analysis, the pressure from public and proper communication done by Environmental State Bureau towards municipality of Saka.

Importance of public participation and using of SEA as a tool that provides additional opportunities for public involvement is demonstrated in the case of development of Jurmala city. The elaboration of amendments to the existing territorial plan got significant attention from the media and public due to the fact that the amendments envisaged decreasing the share of “green areas” within the city and increasing the density of built-up area near the coast. Taking into account that Jurmala is considered as a resort city on national level, as well as in the Baltic Sea region and in the countries of Former Soviet Union, the proposals endangered the ability to maintain existing image about the city. Moreover many inhabitants of Jurmala felt that proposed amendments were favouring just the interests of several land owners and businesses, but at the same time would lead to decreasing to environmental health and quality of life in the city. During 2005 and 2006 several proposals with amendments were proposed and public consultations were organized. In order to ensure more efficient participation the local activists established a NGO named it “Jurmala development society”. Some other local NGOs and national level NGOs, as well as political parties closely followed the process of elaboration of amendments and public consultations on them. The NGOs and

other stakeholders communicated about their concerns related to the planning process to the media and the disputes about amendments were broadly covered by national and local media. The SEA process provided another opportunity for public participation. The SEA was applied due to the decision made by State Environmental Bureau recognizing that the amendments would likely cause adverse environmental impacts. The SEA was applied to all drafts of amended territorial plan thus public hearings had to be organized several times as well. High public interest and activity of local NGO from Jurmala contributed to the fact that state environmental authorities also paid significant attention to the content of Environmental reports prepared within SEA process. Consequently this helped to increase the quality of Environmental report and brought environmental aspects of amendments to the very centre of the whole process. It's difficult to assess direct benefits of the SEA process and public participation, but it helped to increase transparency of the planning process and to cancel those proposals for the land-use that appeared to create irreversible negative impact to the nature areas.

Key actors and target groups. Following *actors* were directly contributing to development of good practice:

- Environmental NGOs;
- State environmental authorities (Ministry of Environment, Environmental State Bureau, Nature Protection Board);
- Media;
- Environmental experts carrying out SEA

The interests of following *target groups* had to be taken into account during development of good practice:

- Local inhabitants;
- Local entrepreneurs;
- Local authorities responsible for elaboration of planning documents;
- Visitors and guests;
- Employees of businesses influenced by planning;
- Environmentalists and researchers of nature.

Summary of results and conclusions. Key achievements in environmental sector are following:

- Prevention of negative impacts to the specially protected nature areas;
- Protected landscape and nature resources that are of national importance.

However key achievement in social sector can be characterized as following:

- Improvement of quality of life for local inhabitants;
- Development of civil society.

The SEA process alone obviously doesn't guarantee that all likely negative impacts on coastal areas, nature restricted areas, and environmental health can be prevented. However the efficiency of SEA goes hand in hand with the development of civil society. The SEA process should be rather considered as an opportunity that provides additional space for the public, NGOs and local action groups to learn about likely impacts on the environment caused by implementation of respective planning document and influence the planning document. The power of SEA rather lays in mobilizing the local inhabitants whose interests are directly affected through planning. If the public doesn't pay attention to the public consultations and SEA and do not communicate their concerns to the SEA experts and environmental authorities, then most likely now changes would be introduced unless the plan may have impact on specially protected nature areas.

Finally author recognizes following factors as crucial ones for success and development of good practice:

- Strong commitment from local NGO to use all available tools for achieving changes and decreasing of unfavourable impacts;
- Ability to react quickly to the changes in the circumstances and provide opinion;
- Credibility to the activities of NGO or civil society group;
- Cooperation with other environmental NGOs and civil society groups and seeking advises from various experts in the fields of environment and nature protection, cultural heritage, art and history;
- Permanent cooperation with state environmental authorities thus promoting their active involvement in the process.

The case study refers also to the fact that there is no direct relationship between the financing that is allocated for SEA process and the efficiency of the process taking

into account that one of the key driving forces for public participation is commitment of local NGO or action groups to influence the results of the planning process. However the author recognizes that the indirect relationship exists between allocated financing and the ability to use SEA as a tool for influencing the planning document. This conclusion is justified with the observation that even highly committed NGO would face difficulties to prove that certain adverse impacts on environment or nature restricted areas may appear if the SEA experts do their work in a poor quality.

13.3. Coastal patrols: Local Environmental NGO Inspection

State authorities face the difficulties to control and prevent illegal construction activities along the coast and even within coastal protected strip. In addition to that local municipalities and environmental NGOs observe uncontrolled flow of visitors during summer period to the dune area and lack of informative signs along the main roads of Latvian coast. These processes that were observed already in early nineties of last century, underline that human impact on coastal areas is increasing. This is worrying as the coastal areas are rich with the habitats both of national and EU importance and without implementation of proper restrictions and control measures, the pressure may cause damage to these habitats. While there is a Law on Environmental Protection and a Law on Protected Belts, environmental NGOs had often stated that these legal acts failed to provide sufficient protection of nature within the protected strip in the coastal dunes. The pressures have seasonal character and the impacts are most disturbing during summer period.

Local NGO that acted mainly on voluntary basis and had several tens of active members used several approaches in order to highlight these issues and ensure that government and other public institutions pay more attention from one side and to educate and inform general public (also foreign tourists) from the other side. The NGO organized discussion meetings with representatives from municipalities and state environmental institutions, proposed several changes to legislation and finally came to idea about organizing of inspection visits and direct non-violent actions against those who have violated restrictions set by national legislation.

The basis of a good practice is the initiative of environmental NGO to carry out voluntary activities aimed to ensure on ground implementation of environmental legislation in relation to the protection of coastal dunes. The NGO activities of organizing the inspection visits to the places where most of violations took place touched the area where efforts of public administration had not been sufficient. The strengths and financial allocations for the state environmental authorities were insufficient. In relation to the development of environmental legislation in the mid-nineties and later on, more and more tasks emerged thus preventing environmental authorities to put lots of efforts in monitoring whether requirements about protection of coastal strip are implemented in practice. On the other hand access to information and opportunities for public participation gradually increased that created good conditions for increasing of expertise and capacity of environmental NGOs.

Systematic inspection visits were organized from 1996 up to 2003. Coastal patrols were aimed to influence the behaviour of target groups in the medium term at the same time promoting the sustainable solutions in the longer term.

Description of the good practice. The idea about the need of more active involvement of NGOs and environmental activists was caused by the situation when neither state environmental authorities, nor municipalities were able to ensure proper control of the visitors' flow to the protected coastal strip area, where driving and parking of vehicles were strictly prohibited. The reasons why official bodies could not ensure proper control were various, but among them the lack of technical means, lack of petrol, lack of human resources and restrictions to work during weekends were mostly mentioned. Comparing to these limiting factors environmental NGOs had volunteers that were committed to prevent destruction of valuable natural habitats in the coastal area and could mobilize other activists.

The initiative to organize coastal patrols was developed by Talsi Environmental Protection Club – a local NGO active in Talsi and in the region of Ziemeļkurzeme. First ad-hoc inspection visits were organized already in the early nineties when volunteers from Talsi VAK checked the protected strip of coastal dunes. Volunteers warned the people who were caught with their cars in the restricted area. Volunteers also checked whether visitors of the dunes followed the fire safety restrictions and organized their

camps in the places where it was allowed. The visits were organized on ad-hoc basis this way reacting to the information about situation in coastal areas that was received from local activists. However during mid-nineties these inspection visits were organized using systematic approach and methodology. Talsu VAK used various tools and different approaches to increase the efficiency of coastal patrols.

When the Law on Environmental Protection was amended and the public environmental inspectors introduced, several volunteers from Talsu VAK passed the exams in order to get the status of public environmental inspectors. This status allowed fixing and documenting the fact of violation and preparing draft statement that was later sent for evaluation to the Regional Environmental Board. Most of the inspection visits were done during weekends paying special attention to the place where most of the violations had been registered beforehand i.e. in Talsu district these areas where Upesgriva, Mersrags and Valgalciems. In Roja the municipal police also controlled the coastal areas frequently thus decreasing the workload of NGOs. While other self-governments in Ziemeļkurzeme region i.e. Mersrags and Kolka denied the need to devote more resources in order to preserve the protected strip in coastal dunes and didn't recognize the need for environmental education activities.

Within coastal patrol campaigns and during inspections the NGO mostly used various communication tools aiming to prevent people to violate restrictions, however also direct action was applied sometimes. Volunteers taking part in the inspections always approached people who had violated restrictions and informed about restrictions referring to legislation and pointing to the fact that they should leave. In several cases NGO volunteers even dug the forest road over preventing violators to leave before they had talked with the public inspectors. The NGO developed good cooperation with local and later on also with national media. During the season several articles about the activities and results of coastal patrols were published in the local newspaper of Talsu district "Talsu Vestis". Knowing that most of the visitors in Upesgriva, Mersrags and Valgalciems were from Talsi town and its neighbourhoods, this approach turned out to prevent other people from becoming violators. In some cases also the list of plate numbers of the violators' cars were published in the newspaper, but it appeared to be inefficient approach for achieving of the medium term objective. As a result of systematic

inspection visits and cooperation with media, Talsu VAK gained visibility and credibility of their activities within the district.

While being busy with fundraising and organizing of inspection visits, Talsu VAK considered the campaign of coastal patrols just as part of the set of activities that should lead to sustainable coastal zone management and preservation of valuable habitats. This is why Talsu VAK organized clean-up actions along the coast and involved other NGOs and pupils from the schools all around Talsi district. During clean-ups participants collected the garbage found within the protected coastal strip and also discussed the harmful impact on the nature caused by violating restrictions. This ensured that participants got certain knowledge about coastal habitats, the reasons why coastal dunes had to be protected and acquired motivation not to litter there and in other places. Both the coastal patrols and clean-up actions were largely supported also by local people living in the coastal areas, while the cooperation with local municipalities was not well developed, though gradual improvements could be observed. NGO also developed close cooperation with state environmental authorities asking to allocate money from state budget for erection of billboard along the main coastal road thus providing sufficient information to the visitors about restrictions that apply to the protected strip on the coast.

The allocated financing for coastal patrols was not the key issue, because the driving force was strong commitment of Talsu VAK to achieve changes and contribute to preservation of coastal habitats. In order to succeed the NGO had fundraised to cover costs of inspection visits. One of the main supporters was Coalition Clean Baltic - and international umbrella organization involving environmental NGOs within Baltic Sea region. Among other supporters following can be listed: Latvian Environmental Protection Fund, Foundation "Ecologia", private sponsors and own contribution through the voluntary work, technical equipment (car) and fuel.

Key target groups and actors in relation to the initiative of coastal patrols can be divided as follows:

- *Environmental NGOs* and their supporters (volunteers) who initiated the idea of coastal patrols
- *Municipalities* whose administrative areas the coastal patrols were organized;
- *Visitors* to these areas and potential visitors;

- *Media* who reported about the coastal patrols and about broader issues related to sustainable coastal development.

Summary of results and conclusions. Coastal patrols brought different results. Within environmental sector as main results following should be highlighted:

- Increase of environmental awareness of the violators, local inhabitants and people living within Talsi district;
- Decrease of harmful impact on coastal habitats caused by driving with motorized vehicles;
- Decrease of landscape degradation caused by garbage in the beach and within the protected coastal strip.

In the social sector following results are important:

- Development of civil society;
- Increase of the role of NGOs and development of capacity to contribute to sustainable coastal zone management;
- Possible opposition to the activities of local NGO
- Increase of awareness among different stakeholders about the complex nature of coastal zone management and interactions among different stakeholders.

Coastal patrols also brought indirect positive impact on development of local economy. The benefits are difficult to measure, but according to observation communication within campaign among key stakeholders promoted implementation of some solutions i.e. creating the infrastructure for parking places. With the decrease of number of violations, less garbage is littered within coastal strip and thus municipality can decrease the expenditures from the municipal budget that were used for clean-ups and spend money for other environmental initiatives instead. However the visitors that had been caught when they violated restrictions are motivated now to look for places where the infrastructure for parking of cars is developed.

Significant outcome of the coastal patrols is also change of perception and better understanding of the issue among stakeholders – NGOs, municipalities, environmental authorities and visitors. Obviously there are many other factors that contributed to the increase of environmental awareness of public about nature values in the coastal areas, nevertheless the NGO dared to start practical activities and communicate about problems

with other stakeholders. There are no easy single solutions that would guarantee win-win scenario in the long-term. Restrictions without proper communication and environmental education do not work in efficient way. Coastal patrols – a control – along with punishments turn to be efficient in combination with communication to the visitors and among stakeholders. The case also underlines that development of proper infrastructure for visitors is essential. Positive experience from past coastal patrol campaign brought to the situation when there are plans to resume these activities starting from spring of 2007 again where again one of the basic elements of coastal patrols would be the use of various communication tools towards visitors of coastal areas.

13.4. Public Participation Principle for Dunes Sustainable Management *Raimonds Ernšteins, Alda Ozola*

To proceed with further solving of the problem of destroying coastal dunes by vehicles and tourists' illegal camp sites there is obvious need of cooperation between all levels of governance from local to the national (and even beyond). There are several groups of stakeholders to be mentioned like local inhabitants and coastal municipalities, environmental protection authorities in the regions and at the ministry level and also various science branches/institutions and businesses. In earlier years i.e. in the middle of 90ties of last century up to 2006 coastal dune protection control was based mainly on the efforts of regional environmental protection authorities that were poorly staffed and equipped and on municipal police in few coastal municipalities. In addition there were several *ad-hoc* control activities organized by environmental NGO aimed at protection of coastal dune zone during summer season. In the situation when the interest about coastal recreation and various forms of tourism was growing while existing number of parking places for cars and other coastal tourism infrastructure was absent it created background for NGO's and local action groups initiate coastal patrols in order to control the implementation of coastal belt's law requirements particularly in the summer time and weekends. These NGO activities led to initiating long term partnerships with various target groups such as coastal municipalities, environment protection authorities and local businesses.

Coastal dune protection work involving regular control visits along with and step-wise communication and partnership development was elaborated already in early 90-ties, but widely spread during 1997-2003. However the culmination of partnership building activities was achieved during realization of the joint project “Save Latvian Dunes” (2007-2009), when finally also volunteer environmental inspectorate system for coastal protection was established. All diverse, but complementary, project activities, particularly based on coastal partnerships and collaboration communication, have been developed and jointly managed by three national environmental NGO’s.

Background information of endangering factors for coastal dunes. According to the Law on Protected Belts in Latvia the coastal strip is considered to be 150m wide in urbanized areas and at least 300m wide outside towns and villages considering the natural habitats, starting from the first natural vegetation in the beach area, dunes and vegetation/forests. Within coastal settlements (villages) and towns the exact width of the belt is established during territorial planning process. Coastal dunes play crucial role in preventing and managing nature-caused and human-made hazards on the Baltic Sea and Riga bay as well in preserving coastal habitats, particularly also due to the growing climate change impacts, in the whole territory of almost 500 km long Latvian coastline.

During last decade there are to be seen several external factors that were helpful for coastal dune protection developments, even most of them are to be noted important for the participatory environmental management as a whole – democratisation and self-activity initiation process of the society, diversification of public participation forms and methods at all governance levels and esp. their interaction, legal acts (e.g. Environmental impact assessment, Territorial planning and also Building laws, renewed versions of the Protection belts law and Environmental protection law in 2006 etc) and administrative regulations are clearly supporting public participation. Also the first widely known cases of legal processes against coastal belt violations, esp. with illegal building works within the restricted 150m or 300m zone are contributing to the growing coastal values understanding and enhancement of other elements of coastal awareness.

Nevertheless the pressure on coastal dunes was increasing, especially during summer period, caused mostly by larger flow of tourists, lack of control and lacking infrastructure. Neither regional or state environmental authorities, nor municipalities were

able to ensure sufficient control of the tourism activities to the protected coastal strip area. Particular concern was about tourists driving in and parking their vehicles in the protected coastal area although that was prohibited by law. The reasons why official bodies could not ensure proper control and enforcement of the law were various, but among them the lack of technical, financial and human capacities and unsatisfactory cooperation between different stakeholders both locally and on national level.

Environmental NGOs have had already earlier experience with organizing coastal patrols i.e. control visits of voluntary environmental activists to coastal dunes in order to control the vehicles and inform tourists about restrictions that one needs to consider in coastal dune area. These coastal protection activities were mostly *ad-hoc* and initiated in the period from 1996 up to 2006. They mainly took place at the eastern coast of the Riga Gulf in the area of the small harbor municipalities of Mersrags, Roja and Kolka where the local group of Latvian Environmental Protection Club (LEPC) was organizing its activities. However coastal collaboration project “Save Latvian Dunes” (2007-2009) was planned as a national level activity covering whole coastal dunes strip in Latvia and envisaging multilateral cooperation with various stakeholders at local, regional and national levels. In addition international partners were involved allowing bringing in and share positive experiences thus bringing the issue of Latvian coastal protection to international level.

This project was a follow-up of NGO initiated activities of Talsi local group of LEPC. Collaboration memorandum in 2007 was signed between Latvian Green movement organization (successor of LEPC), Coalition for Clean Baltic Latvia and Environmental education foundation “Keep Latvia Tidy”. Besides memorandum that involved core group of NGOs, the coastal protection campaign involved many other partners for coastal protection in practice and management as local municipalities and regional and national environmental and forest management authorities and also financial support partners – Embassies of Germany, Netherlands, Great Britain, Norway, Sweden and Friedrich Ebert foundation’ Baltic office. Lately also Latvian Environment Fund administration and Latvian Land and Mortgage bank assigned grants for the project “Save Latvian Dunes”. This bank supports also further Baltic Sea protection activities and has introduced special banking product e.g. eco-credit card and around 3 Eurocents

from every purchase with such cards do work for the Sea projects. Last but not least is to be mentioned important cooperation with mass media both printed ones (like national newspapers and regional ones) and broadcasting ones (regional and national radio and TV), and internet media.

Above described NGO's initiatives and lately also the project proposal were prepared to facilitate participatory dune protection and re-cultivation system development, being particularly threatened by the lack of coastal belts law enforcement capacities and not satisfactory inter-organizational (multilevel and cross-sectoral) co-operation and interested stakeholders' participation. Coastal communication and seeking for collaboration partnerships are main objectives besides inspection/control work. It has to be noted however that level of information and professional training, law enforcement skills and collaboration experience are very different for formal and non-formal parties involved in this process, but this is seen as an important precondition for enriching partnership when each partner can build upon each other's knowledge, experiences and capacities.

Complementary instruments used for participatory dunes management. To analyze the success factors and opportunities for further multiplication effect of coastal collaboration campaign one needs to review the activities and instruments used within the campaign. It started as a bottom-up initiative and was further on supported by various top-down and horizontal instruments – participation and coordination mechanisms, information, education and demonstration methods, economic and legal instruments as well as planning and institutional capacity building instruments. Thus from coastal patrol activities when one or several teams of volunteers from environmental NGOs used direct communication tools aiming to prevent people to violate coastal dune protection restrictions (checking the coastal dune area and talking to people there), there were new communication tools developed within coastal protection campaign allowing and facilitating involvement of various stakeholders and use multiple communication tools. The complementary instruments used within campaign in order to multiply the positive effects, are described below.

1. Direct action and activities on the ground:

- Coastal patrol control visits to coastal dunes area – several teams of volunteers from environmental NGOs organized systematic visits to dunes to control the vehicles in dunes. This activity was supported by information and education work components;
- Clean up actions in coastal dunes initiated by NGOs and organized together with local inhabitants and schoolchildren, as well as re-cultivation e.g. pine tree planting etc, activities involving also other partners to the campaign such as representatives from the ministry, local media etc.;

2. Environmental awareness raising activities aimed to increase awareness about coastal protection issues of tourists and public at large:

- Direct distribution of printed information and education materials including distribution through guest houses, petrol stations, shops etc. (booklets, posters, stickers);
- Web-based communication by publishing of plate number photos of vehicles violating coastal belt law in the campaign website and in the website of main daily newspaper; placing regular updates in the websites of campaigning NGOs;
- Media campaign through newspaper articles, radio advertisement and even video advertisement on national TV, photo exhibitions etc.).

3. Partnership building activities aimed to strengthen existing cooperation and build new partnerships, create trust and overcome hurdles:

- Joint workshop discussions;
- Lectures, seminars, also international seminars;
- Study tours for decision-makers to get acquainted with the situation in the field;
- Participatory work in the local municipal planning process, national legislation and strategies design as well as using guaranteed access to justice in the cases of serious law violations.

4. Capacity building activities aimed to increase the:

- Collaboration meetings and action planning together with other stakeholders, incl. building collaboration networks;
- Local trainings for environmental activists;
- Special trainings and approved legal status (as from 2009 introduced also in the coastal protection) and further work as officially registered voluntary environmental inspectors.

Main sustainable development principles applied for this particular coastal partnership are to be mentioned as follows – participatory, involvement of all administration bodies and use of a combination of instruments. All of the above described tools overlap and interact with each other and they contributed to several objectives at the same time. To highlight their scope of field and interactions, those tools are listed and classified in a table below.

Table No. 1. Contribution of various tools to coastal protection objectives.

Tools used	Control	Awareness raising	Collaboration and partnership building	Capacity building
Coastal patrols	+	+		
Clean-up actions		+	+	+
Information distribution		+	+	+
Web-based communication	+	+		
Media campaign		+		
Workshops, seminars and trainings			+	+
Participation in policy making			+	+
Planning meetings			+	+
Trainings	+			+

Thus there were various types of activities to be recognized step wise and all interacting with each other aimed to strengthening of coastal dunes protection partnership and communication development. Collaboration type communication has to be

mentioned as very important internal success factors for coastal dunes protection and partnerships development – complementary combination of information, education, participation and green behavior instruments being acquired and well further developed and implemented by environmental NGO's. This practice is to be widely spread for other stakeholders in the field.

Collaborative partnerships. Non-governmental organizations (NGO) initiated communication and collaboration with various target groups towards establishing coastal dunes protection partnerships in order to manage both practice protection and recultivation work locally in the field and taking part into decision making process for the coastal management planning and legislation development.

Creating partnerships and building on existing cooperation structures was another crucial basis that the campaign was based upon. It was aimed to mobilize existing resources and capacities so that through multi-level and cross-sector networking and various forms of collaboration the overall capacity for protection of coastal dunes would be increased. Diversity and differing professional skills and knowledge should be seen as advantage in this case for creating of informal partnerships. Multi-level and cross-sectoral cooperation among stakeholders and building of partnerships was clearly a success factor of the coastal protection campaign.

Project implementation scheme that was applied within “Save Latvian dunes!” campaign is to be seen as very effective and it generated various smaller local partnerships and a range of spin-off developments, particularly at the national level and for collaboration in the environmental decision making. All in all coastal dunes protection partnership results are not only facilitating further ongoing coastal communication activities, but also serving as positive case of non-governmental and governmental/municipal collaboration in the field of national environmental management.

There are forms of partnerships that have been already used before and were successfully used also within this campaign. For example clean-up actions initiated by environmental NGOs often involved also local schoolchildren, municipalities and other people. This ensured that participants got certain knowledge about coastal habitats, the reasons why coastal dunes had to be protected and acquired motivation not to litter there

and in other places. Both the coastal patrols and clean-up actions were largely supported by local people living in the coastal areas and that served as a basis to build on the further collaboration i.e. by acquiring information on where most violations were taking place thus allowing to organize more frequent controls in those places.

However there were also new types of partnerships created within the campaign. Whereas environmental NGOs were vocally critical about coastal municipalities in earlier years, this time they seek cooperation and through workshops and seminars were jointly discussing the bottlenecks and the ways to overcome the hurdles. This led to the situation when NGOs were helping with fundraising for municipalities to finance information signs and other infrastructure elements in the coastal area whereas coastal municipalities were assigning municipal police capacities to assist NGOs in their coastal patrol efforts. Similarly also cooperation was strengthened between NGOs and various small business in coastal areas i.e. with guest houses, camping sites, shops and petrol stations that helped in distributing printed information materials thus increasing the outreach of the campaign and contributing to awareness raising. Equally there were new cooperation links established on the level of ministries when Ministry of Environment and Road inspectorate jointly worked out the proposal on how to organize fines for those who drive their vehicles in the protected coastal dune area.

Sustainability of activities. All coastal dunes protection and partnerships building activities described above and specified and foreseen by the project were implemented. State environmental inspectors do recognize decrease of violation protocols issued during last two years that can be seen as a result of successful coastal communication and partnership process. Awareness raising of general public and recreation tourists about coastal dunes protection has been accounted as improving as well, but most importantly, there is to be seen gradual and steady establishment process of the collaborative coastal dune management system. Still the process of diminishing coastal belts law violation cases is the long term process and further efforts need to be ensured in a systematic way.

Sustainability of results is a crucial issue in times of economic crisis when drastic cuts of budget expenditures are applied and as a result the capacities of environmental authorities have been substantially reduced and thus also their ability to organize control

visits is very small. Apart from that the public at large doesn't consider nature protection as a priority in times of economic downturn and there is no public demand for allocating higher resources for nature protection. It has to be noted also that the activity of public inspectors for environment tuned out to be lower than it was anticipated earlier. Within current regulation their biggest role is to contribute to awareness rising of tourists instead of punishing tourists if they violate the law. On one hand these public inspectors who are trained and have passed an exam and clearly demonstrated interest in environmental protection is a potential that regional environmental authorities could use to compensate for their low capacities. This would be win-win collaborative partnership where involved partners can build on each other's knowledge and capacities.

Conclusions. All in all, the proposed project implementation scheme has been very effective and generated various smaller local partnerships and a range of spin-off developments, particularly at the national level and for collaboration in the environmental decision making. Coastal dunes protection partnership results are not only facilitating further ongoing coastal communication activities, but also serving as positive case of non-governmental and governmental/municipal collaboration in the field of national environmental management.

Significant outcome of the coastal protection campaign is also a change of perception and better understanding of the issue among various stakeholders – NGOs, local inhabitants, municipalities, environmental authorities, traffic control authorities, police and tourists. There are no easy single solutions but through partnerships and collaborative communication one should strive for win-win situation. Coastal patrols – a control – along with punishments turn to be efficient in combination with communication to the visitors and among stakeholders.

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13.5. Collaboration Communication for Coastal Governance

Related guidelines below for environmental communication in ecotourism development for the Kurzeme coastal area were designed to be used also as an environmental management tool in sustainable coastal development: multi-stakeholder principle; awareness raising prerequisites approach; principle of sustainable consumption and production; environmental communication complementary instruments approach and also additionally is to mentioned - collaboration management principle as overall imperative principle for sustainable coastal development enhancement in practice. These and other components will be discussed further below in this chapter.

Ecotourism instrument via coastal communication approach. Both coastal communication and ecotourism development are to be seen as the backbone strategies for resolving ongoing coastal environmental protection and land-use conflicts and to continue practical instrumental applications of these strategies on the way towards a sustainable coastal development vision. A set of preconditions for successful ecotourism development based on coastal collaboration communication model have been proposed.

Local preparedness to locate, accommodate and facilitate ecotourism activities are still comparatively low and insufficiently pro-active, which not always has to do with the

obviously still missing necessary institutional and human resources. Neither do local businesses show any interest or offer positive examples, nor are local authorities and residents in particular aware of ecotourism possibilities and also - of the eventual negative impacts if incorrectly applied. The lack of environmental communication, particularly collaboration among all interest groups as well as horizontal and vertical integration of the ecotourism approach into local-regional planning is still to be seen as the main drawback.

The further development and adequate application of our collaboration communication model is required, which, as mentioned already above, proposes that environmental communication is to be seen much more broadly and comprehensively as has traditionally been the case - as multi-stakeholder understanding exchange and collaboration enhancement process e.g. involving information exchange and education/training, public participation and partnership building as well as environmentally friendly behaviour development, but all in all - considering and applying values, intentions and opinions of all key target groups. Environmental/coastal communication theory integration into local coastal practice appears to be crucial for a step-wise participatory capacity creation of the local population/interested individuals and local experts/specialists/decision-makers and for its further self-organized application towards local municipality development. A broad launching of successful ecotourism activities and local ongoing facilitation also depends directly on self-experience development approaches.

The results of the mentioned empirical studies for surveying ecotourism possibilities at the Kurzeme coast and esp. at nature protected areas and Livonian culture heritage territories around Kolka municipality have been indicating the following four basic preconditions for ecotourism developments – approaches containing sustainable tourism awareness-raising prerequisites and related complementary instruments of environmental communication development to be applied in mutual correspondence with two sustainable development principles of multi-stakeholder participation and sustainable consumption and production pattern application. All components designed, applied and understood complementary are leading to coastal collaboration practice establishment at

the local municipality and initially ecotourism awareness and good step-wise management practice enhancement.

Multi-stakeholder principle – principle of involvement and participation of all target groups towards synergies and cooperation enhancement. Results of the studies acknowledged target groups of the environmental communication process, which shall be recognized in every coastal practice situation and adequately involved into collaboration development: framework target groups - public sector/administration (e.g. Ministry of Environment system as well as other ministries and institutions) and local self-governments, community/general public and business/corporate sector; mediation target groups - NGOs and mass media; public education organizations and science/technology sector.

Awareness raising prerequisites approach – approach for the systemic application of four main complementary integrated steps of the communication cycle such as coastal information and coastal education/training, participation and partnership development and coastal environmental behaviour. As per result, ecotourism and sustainable coastal development awareness development components have to be measured as knowledge and practical skills, understanding and ability to solve problems, develop self-regulation attitudes, motivation and readiness for particular actions and experience obtained in target group collaboration.

Principle of sustainable consumption and production. In practice, for the general public and for every one of us, this shall be expressed as everyday sustainability friendly actions, but, particularly, in all fields of human life cycle environments – household life, learning and work life, as well as leisure and social/public life activities to be planned and applied by systemic application of the whole set of integrated management instruments. To support this sustainability practice introduction and enhancement, a coastal communication system and related process development should also be encouraged with the involvement of all main actors in the field as well as active participation in decision-making processes on sustainable development.

Environmental communication complementary instruments approach – approach to combine and integrate information and participation instruments as well as education/training and environmental behaviour instruments into a complementary

instruments package. The development of different practical representation forms and methods for the promotion of dialogue and seeking compromise among official institutions and various public target groups is no doubt essential and is as such already understood quite broadly also at the present coastal tourism development stage. Based on university-municipality coastal collaboration projects, a complementary set of information and education materials and collaboration resources was designed and developed to be further used as the instrumental framework for an eventual coastal participatory communication system required also for ecotourism facilitation (e.g. coastal communication toolbox and interactive platform, pre- and post education modalities and frames for coastal area actors guided- and self-training, coastal communication action guidebook and related handbooks, stakeholder collaboration fora and partnerships; environmental behaviour practice demonstration cases and sites, etc).

14.6. Coastal Communication and Partnerships

Raimonds Ernšteins

Integrated coastal management (ICM) theoretical approach elaboration and its local/regional practice development activities in Latvia at the Institute for Environmental Science and Management of University of Latvia (UNESCO Chair in Sustainable Coastal Development (SCD) was established in 2001) has been gradually developed since mid 1990-ties in close cooperation (incl. case studies and collaboration research work etc) with coastal municipalities and other institutions/organizations concerned at all governance levels in Latvia. The UNESCO Chair is contributing to design and develop **coastal dialogue, research, and education/training** in coastal environmental management and sustainable development in order to help municipal decision makers and specialists, environmental and education employees, community activists and local/regional NGO's as well as all others concerned to solve their problems towards enhancing self-sufficiency and strengthening local identity. Participatory processes, including professors and masters/doctoral students are integrated whenever possible.

For time being the central goal was to create opportunities for **environmental communication** elaboration in general in Latvia and in particular in coastal regions - to create and share information and have access to innovative environmental

education/training, to facilitate public participation and establish wide partnerships for environmental friendly decision-making process as well as develop environmentally friendly behaviour / management both individually and by organizations / institutions/territories etc.

There is a lack of long-term projects in environmental communication and the existing experience regarding population and administration is not effectively inherited. Also missing terminology and academic research hinder the development. Main environmental communications problem fields (R.Ernsteins, 2000) both at national and regional/local level are:

1. Insufficiently coordinated circulation and complicated availability of environmental information, inconsistency with needs of different target groups,
2. Low level of public education and understanding about the necessity of environmental protection and environmental problem solutions possibilities,
3. Insufficient activity of community and other target groups, as well as a lack of mechanisms for participation in decision making,
4. Insufficient preconditions for realization of environmental friendly behaviour/life style and community action.

Today both, politicians as well as community face the environmental problems, however the level of information, professional education, experience and management skills are very different. Consequently the role of communications today is increasing especially but communication instruments are exactly those that may become the crucial tool for environmental problem solving.

Environmental communication could be defined more extensive as traditionally used to, particularly including also public response and participation - environmental communication is multilateral **information exchange and cooperation enhancement process** based on and including information and education of all related target groups, participation and environmental friendly behaviour, being required during successful development of identification, assessment, decision making and solution phases of environmental/sustainability management.

Environmental communication theory developments into practice appears to be crucial for local population/interested individuals and local experts/specialists/decision makers step wise participatory capacity creation and further self-organized application towards local municipality development (3). Successful LA21 process start-up and local ongoing facilitation, depends directly on following self-experience development approaches: self – active work approach, project approach, community involvement approach, interest group approach, team work approach, local involvement approach and environmental communication approach.

Accordingly to case studies_widely done there is to be concluded that university-municipality partnerships proved to be the main driving force behind enhancement of LA21 process in Latvia, particularly in terms of incremental environmental communication development – **information, education, participation and environmentally friendly behaviour** – and self-experience facilitation as two basic LA21 facilitation instruments (instrumental approach) and also preconditions.

The main UNESCO **SCD pilot field project** in North-Kurzeme coastal region (pilot region is about 800 km² in NW part of Latvia, situated both along the coast of the Baltic Sea and the Gulf of Riga) was launched in 1999 aiming to promote and to support sustainable human development of the local municipalities partnership area in an environmentally sound, socially equitable, and culturally appropriate manner. All the main stakeholders in the region were involved in all activities of the pilot project (all activities, esp.LIFE and other projects beyond also), starting from establishing communication possibilities and evolving traditions for rising coastal sustainability awareness, developing co-operative work as such and gathering all for the planning and step wise implementation process of Regional Agenda 21. The role of IESAM/Chair was to act not only as studies/training/consultancy institution but even more as mediator - a "bridge builder" – for conflict resolution and cooperation facilitation among all main local/regional organisations.

All previous research has been taking into account by finding the strategically most suitable activities to integrate more and more environmentally sound means for the future development of the coastal zone. Designed and implemented EU LIFE project (2001-2004) contribution was planned to facilitate the forming of the base for the

planning, implementation and controlling system of Agenda 21 of the NW coastal zone of Latvia. Founding of a new cooperative partnership process - to carry out the Agenda 21 planning process with broad involvement of the society - as well as particularly new collaboration development mechanism and project's management institution – an Regional Agenda 21 Centre jointly managed by all the relevant institutions of the region – was important goal, supposed to fulfil the gap existing between the old management system of the municipalities and the new demands and problems. There are only few examples in other parts of Latvia with caring out of Agenda planning process components, and also few big town examples of founding Agenda 21 Centres. There is no such a Centre taking care on coastal zone management. The Advisory Board of Council was aimed (but not very succesfully) to control and manage activities on the coastal zone. Innovation of the project is partly based on as if well known theoretical things, but not yet used in a practical life of the region, including learning to work together.

Besides main Regional Agenda 21 process development particularly elaborating existing and eventual conflict resolution and wide partnership and cooperation building there will be also designed and implemented **sustainable development DEMO projects** until now having no one existing case in Latvia. People from the region today suffer from the very sceptical attitude to everything new; they are unwilling to pick up new ideas. This would be one of the main innovations of the project - to change the attitude of the people with the methods of involving them in the process and in decision-making.

Four different types of **communication and partnership development demonstration systems or packages** are first time prepared and carried out in Latvia for ongoing wide and long term positive examples/experiences dissemination and also municipal training development:

1. Information demo-projects package - small demonstration projects for project success implementation and results for immediate dissemination: web pages for all partners and databanks' network, project booklet and newspaper etc.

2. Municipal demoprojects package - open public competition for the best sustainable development demonstration projects (4 sites) to be chosen in the four main fields of Agenda 21 - nature environment, social, economic and culture environments - to

be implemented in partner municipalities and Slitere National park in different parts of the project region

3. Eco - technics demoproject package - renovation and repair of the indigenous Livonian culture centre "Peoples House" building and territory in Mazirbe coastal village as Agenda 21 Centre - new type demonstration project itself - based on application of the best available eco-technologies. Constructed eco-technics devices and equipment as house infrastructure elements will be simultaneously used both as separate or/and complect of demonstration projects for guided visitors and municipal environmental training.

4. Local Agenda 21 planning and process management demo-projects package - partnership practice and public participation based Sustainable coastal region development process: Round Table Forum realisation for nature/culture protection development conflict resolution and bottom-up decision making for establishment of the Council for Regional Sustainable Development and elaboration of Coastal Agenda 21 Programme guidelines.

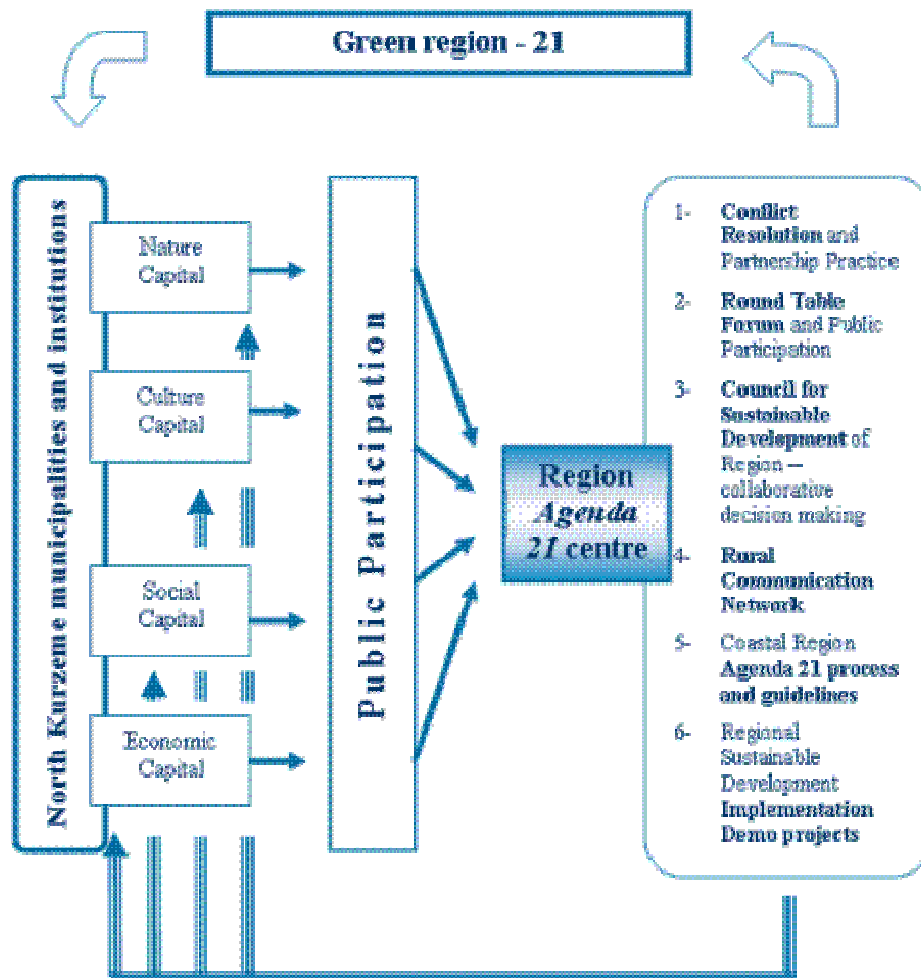
Municipal demonstration projects were elaborated, according to the criteria worked out and taking into account results of public participatory seminars and public survey results, also after discussionsand results of Round Table forum (RTF) based on methodological study results by IESAM.. Basic principles of the sustainable development were to be taken as sustainable development demonstration criteria:

- The project must be environment friendly, including economy of the resources, choice of the best available technologies etc.
- Economically profitable – local resources must be used in effective way.
- Socially equitable – the needs and interests of the local inhabitants must be respected at first as well as different social and professional groups etc.
- Culture heritage friendly – culture traditions, including mental heritage must be investigated, used and renewed for the local development.

Besides the demonstration character (as example of experience learning) each demoproject must be innovative and must contribute to the very local (local site) development in the meantime and favour the development of local/municipal territory and society in the future. Also there was requirement to keep sustainable not only the any

content work (within economical, cultural, educational, social and environmental field as particular sectors and their interlinkages) of demoproject but also merely the whole infrastructure/supporting system of the demo territory/objects.

Environmental and coastal sustainable development benefits are to be seen not only as separate innovative demonstration projects for Eastern Baltic Region but shall be evaluated as coherent whole **Communication and Demonstration Network** (see the graph below). These elements of the coherent whole were seen also as both the main tasks and outcomes of the LIFE project. This applied research hypothesis has been appropriately demonstrated during project execution and purposely verified.



This is the first time when the overall Agenda 21 process has been started in the whole coastal region and will cover all coastal municipal territories, involve all main stakeholders and local community members. This project as sustainable development facilitating project was not a set of isolated actions to which alike local stakeholders has been used until now. In order to facilitate and ensure successful collaboration between the politicians, administrations of the local authorities and other important stakeholders with general public and different societal interest groups in the region, as well as to integrate the principals of sustainability in the decision making and implementation procedures the following approaches has been developed and tested: council for sustainable development in the region for partnership co-operation and "top-down" implementation; round table forum for grassroots initiatives and participatory development and "bottom up " implementation; regional sustainable development process itself - visioning and indicators elaboration for process development and inter-sector progress measurement and also practical activities.

Realization of comprehensive LIFE project has created also a number of spin-off results and new development projects as well as ongoing work of Regional Agenda 21 centre will further facilitate next necessary activities for coastal region development.

14. Integrated Environmental Communication Governance

Raimonds Ernšteins

14.1. Participatory Coastal Communication Development

Sustainable coastal development is a challenge as it needs to deliver economic prosperity, population and employment development while at the same time preserving existing natural values, marital and terrestrial ecosystems, and cultural heritage. Environmental communication provides valuable contribution in achieving sustainable coastal development as it promotes environmental awareness, change of behavioural patterns and aims to increase public participation. There are to be recognized at least several main socially based environmental and sustainability management problems both at national and regional/local levels when enforcement of soft management instruments should be necessarily increased. First of all, as such problem we shall mention insufficiently coordinated circulation and complicated availability of environmental information, inconsistency with needs of different target groups. Second - low level of general and professional education and understanding about the necessity of environmental protection and environmental problem solutions possibilities. Next is to be recognized insufficient activity of general public and other target groups, as well as a lack of facilitation mechanisms for participation in decision making, Finally, also insufficient preconditions and lack of motivation process for realization of environmental friendly behaviour/life style and community action. But the most important and not traditionally perceived problem is the clear absence of integrated and mutually complementary application of all four activities necessary and mentioned above - information and education, participation and environmental behaviour as disciplinary components of so called participatory environmental/coastal communication.

Subsequently, environmental communication is to be seen more wide and diverse as used to - as multi-stakeholder understanding exchange and collaboration enhancement process e.g. involving information exchange and education/training, public participation and partnership building as well as environmentally friendly behaviour development, but all in all, considering and applying values, intentions and opinions of all key target

groups. Target groups of environmental communication process shall be recognized in every coastal practice situation and directly involved: framework target groups - public sector/administration (e.g. Ministry of Environment system as well as other ministries and institutions) and local self-governments, community/general public and business/corporate sector; mediation target groups - NGO's and mass media; public education organizations and science/technology sector;

This communication model (see fig.1) shall be called integrated action-oriented model – the model of incremental coastal (environmental) communication cycle – appropriately demonstrating the linkage between environmental communication components mentioned above or the cyclic basic steps of communication process and pedagogical/practical results that within the particular cycle ensure applied and concrete practical case oriented environmental awareness development, but within the multi-cycle integration - the process of repeating and inter-supplementary self-experience development, what is facilitating general environmental awareness enhancement.

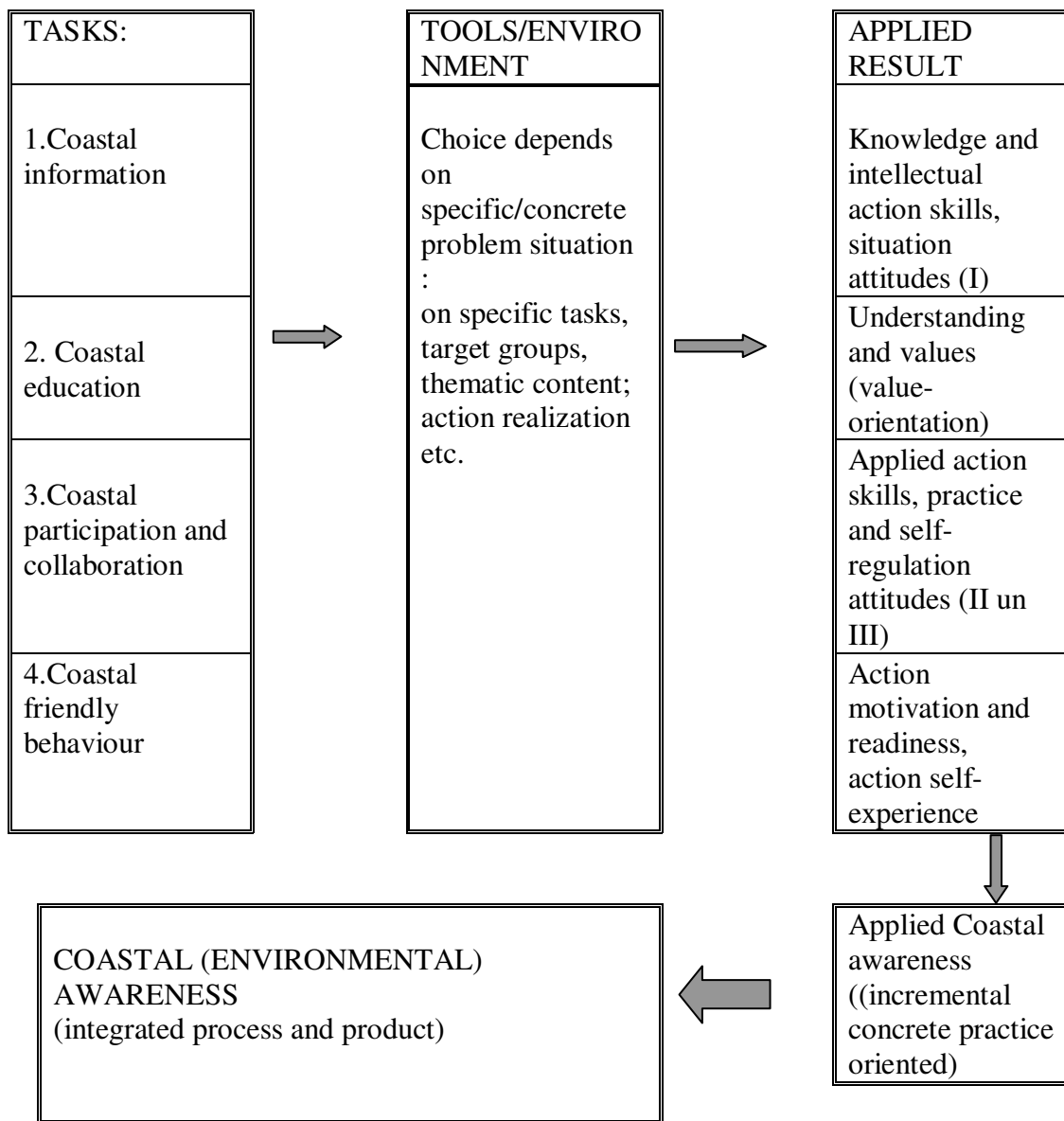


Fig. 1. Incremental coastal communication process as four partite cycle concept - integrated action-oriented model

Environmental awareness being as one of the main preconditions for sustainable development, maintenance and improvement of environmental quality, in practice, for general public and for every one of us can be expressed as environmentally friendly action in any field of life, work, leisure and social activities as well as active participation in decision making processes on sustainable development. The development of different

representation forms for promotion of dialogue and seeking compromise among official institutions and various public target groups is no doubts essential and so already perceived at nowadays coastal protection development stage. Coastal communication could be defined as participatory including also action oriented part, aimed and created by “information and education flow” - public response and participation, but all complementary parts are being required for successful development of identification, assessment, decision making and implementation phases of environmental management.

Coastal communication results based on four main communication cycle complementary integrated steps is to be planned and realized by systemic application of the whole set of integrated management instruments, and, have to be measured as knowledge and practical skills, understanding and ability to solve problems, up-to self-regulation attitudes, motivation and readiness for concrete action and obtained experience for target group’s involvement. Environmental communication could be realized disciplinary as environmental management sector, but also should be integrated at all decision making levels, fields/sectors and processes. This all has been considered while starting case studies and collaboration research for development of integrated coastal communication management system for municipalities and regions based on mentioned participatory communication integrated model.

14.2. Practice Cases – Communication for Sustainable Coastal Development

Research and training activities in coastal (environmental) communication field were prepared methodologically and conducted by DoEM at the University of Latvia in format of interactive collaboration seminars with wide stake-holders participation and support from academic personnel with master students involvement as well (field studies and tertiary education practice too). During university and EU co-financed projects (Life, Leonardo, esp. Interreg project Coastal Sustainability, etc) implementation in Latvia was step-wise developed initial background for coastal participative communication system design and establishment. Lets mention such backbone activities as coastal municipalities based and local development oriented set of participatory seminars, realized as collaboration partnerships between municipalities main target groups and university with

jointly produced real time action planning guidelines for municipal coastal application : Carnikava Case - Sustainable Development Action Programme; Saka Case - Integrated Coastal Policy Plan; Liepaja Case – Coastal Communication Action Programme; Roja case – Integrated Coastal Communication Policy Plan. Based on these coastal collaboration seminars, was additionally designed and developed complementary set of information and education materials and collaboration resources to be further used as coastal participatory communication system framework and facilitation instruments (e.g. coastal communication toolbox and interactive platform, pre- and post education modalities and frames for coastal area actors guided and self training, coastal communication action guidebook and related handbooks, stakeholder collaboration forums and partnerships; environmentally friendly behaviour practice demonstration cases and sites etc). All components designed, applied and understood complementary are leading to coastal collaboration practice establishment and awareness enhancement.

Environmental/coastal communication theory developments into practice appears to be crucial for local population/interested individuals and local experts/specialists/decision makers step wise participatory capacity creation and further self-organized application towards local municipality development. Successful SCD process start-up and local ongoing facilitation, depends directly on following self-experience development approaches: self – active work approach, project approach, community involvement approach, interest group approach, team work approach, local involvement approach and environmental communication approach.

14.3. Coastal Case Studies

Environmental communication audit (ECA) or status assessment is an innovative approach for coastal municipalities. Its applicability in the diverse toolbox of municipal environmental management process was tested during field studies and pilot case in Latvia – in Liepaja, Roja and Ventspils coastal municipalities. ECA was carried out as data collection and text analysis, site visits and interviews involving representatives from municipal institutions, all stakeholder organizations, as well as public – all done to serve as basis for Municipal Environmental Communication Strategy development.

Environmental communication analysis in municipality was based on five main target group sectors: public sector (or national governance level); municipal sector (local municipal governance level, including municipal enterprises and subordinated structures, like schools); corporative environment (enterprises, mainly industrial producers) and household sector. Environmental communication four steps or dimensions were assessed sectorally, namely: environmental information, environment education, public participation and environment friendly behaviour.

On the base of these successful experiences there are also developed general Guidelines on Environmental (coastal) communication action programming aiming for coastal municipalities as well as civil society organizations interested in improving environmental quality in coastal areas and increasing public participation. Particularly important is further and inovative development of information and communication instruments at their growing variety of different types and complexities, esp. when combining them in diverce application sets, what is to be done paralely and in complementary interrelation with traditional groups of instruments as planning and infrastructure, legal and economic/financial ones.

13.4. Integrated Environmental Management System Development

The four partite incremental environmental (coastal) communication cycle model demonstrates the necessity for all four basic elements and their direct and cyclic interaction within environmental communication process as identified in the definition and latter development of National Environmental communication and education strategy (2001) which can be mentioned as one of the nation wide applications of this theory and practice based development.

Environmental policy goals can be effectively reached only providing that the main interested groups are participating in policy making and supporting the realization of this policy. Pretty often the application of these principles today is complicated as the cooperation between different target groups in context of environmental policy implementation is just under development, inter alia continuing process of self-organisation of different target groups. The main target groups (see mentioned above)

have been identified and analysed in the context of environmental communication and public policy theory as it is today. These target groups can be characterized as the most significant circulators, recipients, architects of the form and content of environmental information, as well as the main mediators needed to ensure feedback and cooperation. For implementation of the Strategy, relevant Action Program has been developed determining concrete activities accordingly with various environmental protection matters and priorities.

Development of environmental (coastal) communication management system for coastal municipalities is a participatory process consisting of several consecutive steps as for the general management cycle. Process is starting from the audit of existing environmental communication – environmental information and education, environmental participation and behaviour as well as complementary integrations, if any, of these components – as of both documents and practice in the coastal municipality up to finally developing coherent whole management system that should be evaluated and improved regularly e.g.: assessment of the state of environmental communication, current methods and processes; designing environmental communication policy as defining main values and principles, identifying key target groups and setting goals; environmental communication policy planning is further developing targets and preconditions and instruments necessary; developing environmental communication action programme includes prioritised cascade activities with defined role of each target group and all type of resources necessary; developing guidelines for implementation of environmental communication management system, choosing indicators and planning the monitoring, audit, review and corrective actions.

There could be used also approach of four separate sub-environments that correspond to the human lifecycle – household, educational, working and public environments - as everybody is involved or linked to some or all of them in our everyday life cycle. Also key target groups are particularly recognized and involved as for the resource and problem analysis, policy development and planning and further action programming. There should be practical focus on at least main target groups whereas including in local parishes so called dominant target groups from each of the human life-cycle sub-environments and the final target group including media, NGOs and science

acting as mediators between main four actors: for the household environment the dominant target group is local inhabitants; for education environment – formal and informal educational establishments; for working environment – private companies and also state and municipal institutions; for public environment – municipality itself respectively.

The following list of recommended activities resulting from studies mentioned above has to be seen as draft of the complementary set of processes and products to be designed and developed, implemented and tested, finalized and disseminated during further development projects for step-wise establishment and testing of integrated participatory coastal communication system framework:

- design and develop coastal dialogue platforms and practice, based on both complimentary interdisciplinary research establishment and interactive education/training development in coastal participatory communication towards enhancing local self-experience, strengthening coastal identity and municipal sustainability;
- diversify wide application of innovative approaches in environmental and coastal communication theory and practice to be established during project - coastal communication and partnerships as new challenge and aim for ICM re-enhancement;
- design, demonstrate and disseminate innovative coastal communication methodologies and approaches, schemes and procedures, measures and tools;
- create and share experience and materials of and for - coastal integrated information and innovative environmental education/training, facilitation of public participation and establishment of wide partnerships for environmental friendly decision-making process as well as developing of environmentally friendly behavior/management both individually and by organizations/institutions/territories etc;
- facilitate development cases and demo as well as integrated forums/boards of different inter-institutional and inter-municipal collaboration partnerships closely linked with public involvement enhancement process;

- incorporate coastal geographical information systems (GIS) into participatory communication systems for coastal integrated management and territorial planning;
- developed coastal sustainability assessment cases using complex of indicators - creating a local/regional/national integrative sustainable coastal development indicators systems;
- utilise open-access internet-based thematic coastal map services to provide wide easy access information for public and municipalities about the coastal environment and thus development of online internet map services to support the ICM elements enhancement;
- complementary application of mentioned above variety of ICT with different other type of measurements/assessments, policies and planning/management designs, practice monitoring and coastal ICT systems creation and implementation;
- self-experience practice development methodology demonstrations and practical implementation cases at municipalities of mutual cooperation and partnership development facilitation between key local stakeholders e.g. municipal decision makers and specialists, environmental and education employees, community activists and local/regional NGO's as well as all others concerned with coastal problems;
- organize development of coastal participatory communication process as coherent whole: national/regional strategy on coastal communication, coastal information and integrated management methodology centre (incl. coordination one stop coastal agency) and coastal communication e-portal and regular networking service, further development of national coastal communication infrastructure (incl. active support and interest raising efforts nationwide e.g. stressing preparations and wide use of spatial information demonstration activities for decision makers, planners, researchers etc target groups) as well as comprehensive set of education and training activities (both process and products oriented) on coastal communication for formal (esp. higher education incl. master and doctor study programs at Latvia University

on coastal communication management) and non-formal education activities and establishments, professional and also public/interest education etc,

- recognition and facilitation conditions development, incl. participatory forum and platform, for general target groups for coastal communication: governmental and intergovernmental institutions/organizations; municipalities and their representing organisations; residents; business organisations; non-governmental organisations; mass media; public education organisations (incl. non formal and adults education, general education, vocational and professional education); science and technology and higher education establishments;
- prepare coastal participatory communication strategy realisation tools, indicators and monitoring as well as action programme framework for coastal communication for evaluation of coastal communications and awareness development;
- further enhancement and demo cases of coastal integrated policy/management instruments as complementary tool package – coastal toolbox creation: interdisciplinary research and education instruments, institutional and infrastructure instruments, legal and financial instruments, and, also communication instruments;
- a network of newly created and developed local coastal communication centres – coastal park & communicate & behave establishments;
- complementary application of variety of information communication technologies and communication platforms, toolbox, centres etc, incl. for communication practice development monitoring and coastal communication observatory creation and implementation;
- combine all activities above as coherent coastal participatory communication system as well as support innovations further development of coastal communication policy and practice and integrating into SCD (or integrated coastal zone management) – innovative coastal integrated management.

Conclusions. Next developments taking into account achieved sofar by mentioned pilot coastal municipal projects shall ensure further elaboration and

demonstration of both theoretical frames and also practical background for SCD innovation - development of integrated participatory coastal communication system. Participatory coastal communication (PCC) methodology is to be based on complementary interaction cycle and integrative implementation of coastal information with coastal education/training, participation and partnership development as well as coastal environmentally friendly behavior, to be realized by systemic application of all complex of environmental integrated management instruments. This would be seen as most important pre-requisite for existing innovation management development of SCD for local/regional sustainable coastal development practice in Latvia and Eastern Baltic and shall include appropriate design and development of coastal communication programs and services as well as demonstration sites and cases for a range of complementary activities.

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15. Conclusions: Train-the trainers Modules Development

The DoEM case study research initiatives on environmental communication and management have been carried out in Latvian local municipalities in search of a holistic, comprehensive and systemic approach towards municipal environmental management and development processes that would possess the greatest potential of achieving change – through a change in understanding, attitude, motivation and behaviour, which all are a pre-requisite on the way to sustainability.

The goal of the collaboration research projects (apart from situation assessment and problem identification) was twofold:

1. applied goal: to produce a real applicable end-product in the form of a locally tailored environmental communication (or in some cases – environmental co-operation) policy plan and/or action programme proposal;
2. momentum-building goal: to give an initial boost to the further local environmental communication process development, broaden the outlook of the target groups so as to reveal the unacknowledged vast potential of environmental communication in building local environmental awareness, facilitating participation, expanding the usual confined frameworks of co-operation, breaking the traditional perceptions and stimulating new innovative approaches.

Methodology applied:

- University-community research initiatives and the case studies have been carried out as collaboration projects between the DEM and the local governments.
- CSR methodology (incl. municipal planning and regulatory document studies, interviews, surveys, focus group discussions) – a comprehensive study of all municipal target groups (local administration - public and educational institutions -residents and NGOs – business sector – the media)
- 4-P environmental management cycle analysis: problem analysis (1P) → policy definition (2P) → policy planning (3P) → programming (4P)

- Collaboration Communication Model (Ernsteins 2003)

To achieve the above holistic, comprehensive and systemic approach, a new environmental communication model entitled Collaboration Communication Model has been applied in DoEM - implemented environmental communication research and has to this day served as a basis for a number of case studies in Latvian local governments.

The model embodies a comprehensive systemic approach towards environmental communication as it pools into a coherent system all of the key elements (or dimensions) that form a joint communicative environment - environmental information, environmental education, public participation and environmentally friendly behaviour. Thus, it aims at illuminating the interaction of the four notions (often disengaged both in theory and municipal practice) and discarding the traditional – information flow-focussed communication approach. The model also insists that the potential of the combined force of these four communication dimensions can only be utilised to the full extent through ensuring co-operation and partnership among all target (stakeholder) groups involved.

Environmental communication is thus to be seen as multi-stakeholder understanding and co-operation enhancement process, by complementarily involving all four dimensions mentioned, but above all - by pooling the values, intentions and opinions of all key target groups, i.e. local inhabitants, municipal and state institutions, NGOs and the media, businesses, etc.

The model embodies the environmental communication cycle – subsequently demonstrating the linkage between environmental communication components or the cyclic steps of the communication process and the pedagogical/practical results that ensure - within the particular cycle – applied and concrete practical case-oriented environmental awareness development, but within the multi-cycle integration - the process of repeated and supplementary self-experience development, which facilitates general environmental awareness enhancement. Thus, this model is based on the imperative of two complementarities: the complementarity of the four environmental communication dimensions, and the complementarity of all target groups working in collaboration.

Results gained for training development and implementation.

1. Environmental communication integration tool-set.

2. A 4-directional model of integrating disciplinary environmental communication into municipal development (Municipality of Liepaja).
3. Key work directions for further development of the environmental policy combined with key capacities for systemic environmental communication
4. A model of integrated environmental collaboration - or an Integrated
5. Environmental Co-Operation Network has been developed.
6. Conclusions and application:
 - Mutual integration of sustainability capitals as an imperative: The Environmental Policy Plan and Action Programme of Cesis town, based on University of Latvia and municipality collaboration project (incl. field studies), is the first ever to have been elaborated by applying a full-scale complementary assessment of the two-way integration of environmental capital into social and economic ones and, especially, a return integration as well.
 - The environmental communication case studies have served as pilot research into the potential and possibilities afforded by the proposed four-dimensional environmental communication model.
 - Research has yielded positive results as to the model's practical applicability in environmental communication process initiation and facilitation, stimulation of target group/ stakeholder self-activation for co-operation, dialogue and increased participation in building a sustainable local community. The four-dimensional collaboration communication model has received positive feedback from the local governments where it has become part of their municipal environmental and development planning mechanism.
 - As acknowledged by the environmental experts of these local governments, the model has given an impetus towards building new partnerships, finding creative solutions, and broadening the scope of activities. Integration of environmental communication into the planning documents, being a political commitment, has facilitated the implementation of these issues into practice and has helped bring them to the forefront when designing specific action programmes and investment projects.

- Over the course of research projects and later on different municipal planning processes, we can recognize that environmental communication is already growing into a separate and vigorous environmental sector along with the traditional environmental management sectors such as waste management etc.

16. Summary: Municipality – University Partnership for Local Sustainable Development Facilitation

Raimonds Ernšteins

Research and education/training for sustainable regional/local development as interlinked and mutually beneficiary for both theoretical approaches elaboration and later realization - at tertiary and other education levels as well as its local/regional practice activities development in Latvia has been gradually developed at the institute since mid 1990-ties. UNESCO Chair in Sustainable Coastal Development (established in 2001) is directly contributing to design and develop coastal **municipal dialogue and bridge-building, collaborative research and education/training as well as participation and partnership facilitation** in order to assist/help all local stakeholders/everybody concerned to proceed with regional/local sustainability problems towards enhancing **innovative development and strengthening identity**.

Local Agenda 21 (*LA 21*) or Sustainable Development Action Programs (SDAP) for local and regional levels are being step wise developed in municipalities, however, it will take a much **longer time** and, most importantly, is requiring **innovative approaches and instruments**, to begun really full scale implementation of Local Agenda 21 in Latvia, as significant changes are required in the everyday peoples life and municipality management and the organization of Agenda 21 work, the identification and involvement of major target groups and activists, securing necessary all kind of, esp. human, resources etc.

Performed surveys in both 2000 and 2004 are covering all LA21 process information resources in the field (for both municipal employees/experts and general public) available in Latvia and empirical data collected by designed questionnaires and semi-structural interviews of municipal and education specialists. Useful experiences were gained by university initiated self-development and analysis of *LA21* research and development projects processes and related education courses/programs (at universities and schools, in non- and informal sector). Pilot projects in Riga and Jurmala towns, in the Bartava and North-Kurzeme coastal regions etc. (1;2) allows an LA21 process evaluation

to be made recognizing that several Latvian municipalities have practically passed through first steps of experience and that successful local sustainable development nation wide establishment shall be initially started very locally and with emphasizing, facilitating and spin-off developing of **LA21 action programming** as well as carefully taking into account **local traditions** and even popular terminology background, also specialized LA21 marketing.

Precondition - collaboration research and partnership development. Sustainable development practice demands for interdisciplinary research and interactive training and universities are really those encouraging LA21 process. The Institute as a multidisciplinary unit are elaborating **cross-sectorial socio-environmental** research collaborative projects on LA21 facilitation with emphasis on environmental communication and local/regional **self-experience** development. This includes analysing local conditions and initiatives, public and stakeholder involvement etc., but all being based in as close as possible cooperation in the field with local professionals, government authorities, non governmental organizations (NGOs) and local business.

Framework - structural network approach for LA21 facilitation. There were adapted and also re-developed in Latvia different *LA 21* application models done as municipal research-training-facilitation-practice cases - both traditional top-down, bottom-up approaches and *LA 21* centre intermediation ones, but also were developed innovative instrumentalisation **integration and disciplinarisation approaches**. Latter one is including 3 different non-traditional sub-approaches being really perspective for LA21 taking into account existing conditions in Latvian municipalities - ecotourism as integrative sector and tool for local development; local school *Agenda 21* education and practice as municipality sustainable development benchmarking; cultural heritage everyday application for *LA21* – local/regional museum instrumentalization cases. **Culture environment perspective** - should be wider used as another cornerstone for *LA21* education and process development in Latvia.

Further university activity step was a case study designed, developed and implemented in Nort-Kurzeme coastal region (Dundaga, Roja and Kolka municipalities) – “Livonian Green Coastal region 21” realized as LIFE Environment project – aiming to apply most if not all eventual approaches, to test also some of the elaborated models and

to use widely communication instruments and techniques(2). Components of this coherent whole approach were developed as research hypothesis and realized into practice as a kind of regional sustainable development action program (structural network):

- Stakeholders conflict resolution and partnership as overall framework,
- societal round table forum and public action groups as bottom-up process,
- regional council for sustainable development as top-down process for collaborative and integrative decision planning,
- regional *Agenda 21* centre as intermediary facilitation coordination, also
- **rural communication** (formal/non-formal) **network** (incl. regional sustainable development implementation demonstration projects etc) as instrumental integration and sectorial development.

Case study results analyzed permits to conclude, that combined version of all four LA21 process approaches has been tested successfully (however with different degree of quality fulfillment) and proves to characterize the fifth process approach - **facilitation as structural network approach**. **Basic preconditions** (besides traditional resources necessary) are to be developed for Latvia – applied LA21 **principles and approaches** as well as emphasizing development of rural communication **instrumentalization** (innovative theories and interactive practice) as LA21 content and process components.

Content - four partite incremental environmental communication cycle. LA21 cases and sociological research done in Latvia often have shown that unfortunately even also known information and education instruments are not always incorporated in the environmental management/LA21 developments and really targeting environmental awareness raising – there is a need for an **environmental communication system and related self-practice process** development with involvement of all main actors/interests in the field.

Environmental awareness as one of the main preconditions for sustainable development can also be expressed as environmentally friendly action in any field of everyday life, work, leisure and social activities as well as active participation in decision making processes on sustainable development. To encourage dialogue and development of mutual agreement process among official institutions and various public target groups

and to ensure formal and informal cooperation and environmentally friendly behavior of inhabitants, also **innovative creation** of the necessary preconditions, incl. complementarity of communication components/steps and effective mechanisms of implementation, are required. After testing effectiveness of new approaches elaborated during LA21 facilitation processes in Latvia environmental communication could be defined more wide as traditionally used to, particularly including also public response and participation - environmental communication is multilateral **information exchange and cooperation enhancement process** based on and including four main incremental cycle steps - information and education of all related target groups, participation and environmental friendly behaviour.

This cycle shall be required for the successful development of identification, assessment, decision making and implementation phases of environmental and sustainability management. All **four basic elements and their direct and cyclic interaction** within **environmental communication** process shall be developed and measured as knowledge and practical skills, understanding and ability to solve environmental/sustainability problems, up-to **self-regulation attitudes, motivation and readiness** for concrete action and obtained experience for case related target groups as well as each individual in general, what within the multi-cycle process of repeating and inter-supplementary **self-experience** development is facilitating initially special and then cycle-wise further also general environmental awareness enhancement.

Environmental communication theory developments into practice appears to be crucial for step wise participatory capacity creation and further self-organized application towards local municipality development (3) and depends directly on main self-experience development approaches mentioned below.

Process - self-experience development for local initiative and process building. Elaboration and testing/application of different separately known elements of this self-experience development approach (SEDA) in practice in Latvia turned out to be further designed into a complex of LA21 process facilitation activities for local interest groups and individuals as a kind of self-experience development tool-box. So, successful LA21 process start-up and local ongoing facilitation, esp. in rural areas, depends directly on following **self-experience development toolbox components:** self-active work

understanding; project ideas generation approach; community involvement wave; interest groups encouragement; team facilitation work; local expert's involvement; communication cycle emphasis.

It is the main prerequisite for local development in general, and LA 21 development in particular. We have also to highlight a seemingly **unconventional** method for community involvement and interest creation – self-experience **seminars** – application for local community target groups self-experience and initiative development seminars in municipalities. In most of the cases the seminar has served as a real trigger to start initiative implementation. Some of the initiatives brought forward can be implemented rather simply, others will require longer period of time (even several years). The seminar output is not only information acquiring and exchange for **seminar participants** (desirably representatives of the main interest groups/target groups and local activists), but also involvement and esp. developing of concrete ideas and projects, comprehensive self-experience, and mastering of action means, finding of cooperation partners, what is also important for further development of the projects, deeper knowledge on the local activists and leaders/organizers.

Conclusions. Universities as knowledge institutions (also professional NGO's etc) are actors, really in the local/regional sustainable development game. Organization of facilitation/participatory processes at municipalities including wide involvement of university professors and master/doctoral students and using all eventual tertiary studies elements are integrated whenever possible and so the university-municipality partnerships proved to be the **main driving force** behind enhancement of *Local Agenda 21 (LA21)* research/education and process itself in Latvia, particularly when following model (complimentary set of elements for LA21 facilitation in the countries-in-transition) can be implemented:

5. collaboration/partnership research as start-up **precondition** and then project based SDAP development background,
6. structural network facilitation approach for LA21 development as **framework structure** for process facilitation,
7. four partite incremental environmental communication cycle as LA21 activities **content development**,

8. self-experience facilitation/approaches toolbox as activity process development;

There were continued work within WP 3 frame also during MS7 (September 2010 – December 2010), but, after there was some shifting taking place during first milestones since the very start of the project work, during MS7 project is fully realized according to the project application for this project stage. Particularly, the formal outcomes as per project proposal are as following.

1. Gathering background information on the status of environment in CB region related to the WP topic – coastal communication. Work continued to gather info on all 4 coastal communication topics as well as coastal sustainability indicators and other related coastal issues. Prepared materials were used for project Resource Pack development.
2. Coastal communication resource materials step wise development:
 - a. Fact-finding seminars on coastal communication and indicators. Previously shifted last 3 seminars have been realized on 7th and 13th of September and 17th of December and resources acquired introduced. Seminar reports also done.
 - b. Finalizing and translating Coastal Communication Resource Pack (CCRP) materials and Training modules (TM). CCRP compilation continues. Resource pack finalized - prepared all 5 resource materials (RM), both training modules as well as first case study (CS-1) material and selected translations done, but second case study (CS-2) will be finished during MS8 as per application.
 - c. International and national test of training modules and resources. All RM and CS mentioned, has been internationally tested (from August till October) and evaluation report done. Both TM undergone national (each separately) and international (both together sent for international project expert's evaluation) test run and report done. Final test-run for training modules planned for MS8 as per project.
 - d. Developing case study (CS) materials of the CCRP. CS-1 finalized and report done, but CS-2 designed and drafted to be finished during

MS8 as per application since last municipal participatory coastal seminar were realized successfully (12.-13. November).

3. Dissemination network continued. Dissemination network expands; dissemination takes place during all activities mentioned above.

Following is the list of all resource materials designed, tested and prepared.

1. Resource Materials (RM):

- RM-1 Environmental Management for coastal sustainable development (ICZM)
- RM-2 Sustainability indicators for coastal municipalities
- RM-3 Household Environmental Management and coastal communities
- RM-4 Environmental communication for coastal management
- RM-5 Collaboration communication and social instruments development

2. Case studies (CS):

- CS-1 Integrated coastal management: Saulkrasti municipality case
- CS-2 Coastal communication management: Saulkrasti municipality case

3. Training Modules (TM):

- TM-1 Integrated coastal management and communication
- TM-2 Coastal communication for sustainable development

There are following planned material grouping under the both Training Modules (TM) elaborated:

TM-1 Integrated coastal management and communication

- RM-1 Environmental Management for coastal sustainable development
- RM-2 Sustainability indicators for coastal municipalities
- RM-3 Household Environmental Management and coastal communities
- CS-1 Integrated coastal management: Saulkrasti municipality case

TM-2 Coastal communication for sustainable development

- RM-4 Environmental communication for coastal management
- RM-5 Collaboration communication and social instruments development
- CS-2 Coastal communication management: Saulkrasti municipality Case

Contents of Training Modules designed are as follows:

TRAINING MODULE 1.

1. Introduction to sustainable coastal development

2. Environmental management and coastal municipalities: from theories to practice
3. Integrated coastal zone management
4. Indicators for sustainable development – local municipality case
5. Collaboration governance approach
6. Household environmental management
7. Climate change adaptation governance for municipalities
8. ICZM Programme: Saulkrasti Municipality case

TRAINING MODULE 2.

1. Introduction to coastal communication
2. Environmental communication – from theory to practice
3. Integrated approach: Environmental communication integration into municipal environmental management and development planning
4. Disciplinary approach: Environmental communication for Liepaja municipality
5. Coastal communication best practice
6. Coastal risk communication
7. Green municipality: Public relations and communication
8. Coastal communication Action Programme: Saulkrasti Municipality Case

All products are undergoing national and international testing and will be accordingly re-elaborated before international dissemination.

17. Bibliography

What follows is a systematized list of environmental communication and related bibliography, both interdisciplinary and disciplinary. The list includes, among others, separate chapters on municipal environmental communication and co-operation, and on coastal management and communication, in which a number of publications by the Department of Environmental Management at the University of Latvia can be found. The list also draws on resources from the Environmental Communication Network.

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13. ORGANISATIONS, WEBSITES, LINKS

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