Dieva Daba

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# Table of Contents

Dieva Daba Strategic Framework .................................................................................. 4  
Introduction .................................................................................................................. 5  
Overview ....................................................................................................................... 6  
Location ......................................................................................................................... 11  
Approach ....................................................................................................................... 12  
Worldview Dimension ................................................................................................... 14  
  Understanding and Accepting Diversity .................................................................... 15  
  Science and Spirituality ............................................................................................. 17  
  Telling a New Story ..................................................................................................... 18  
  Spirituality and Ritual ................................................................................................. 23  
Social Dimension .......................................................................................................... 28  
  Dieva Daba common vision ....................................................................................... 29  
  Governance ................................................................................................................. 29  
  Personal empowerment and leadership ..................................................................... 38  
  Celebrating life: art and creativity ........................................................................... 41  
  Bioregional networking .............................................................................................. 46  
Economic Dimension .................................................................................................... 55  
  Global and local impact of the economy on the project .......................................... 56  
  Right Livelihood ........................................................................................................ 63  
  Social enterprises ...................................................................................................... 65  
  Business Planning ...................................................................................................... 75  
Ecological Dimension .................................................................................................. 86  
  Climate ChangeResilience ........................................................................................ 87  
  Water and Nutrient Cycles/ Ecological Engineering ................................................ 89  
  Water Heating,Circulation ....................................................................................... 89  
  Greywater Treatment ................................................................................................. 91  
  Constructed Wetlands ............................................................................................... 95  
  Permaculture Design ................................................................................................. 103  
  Renewable Energy and Carbon Neutrality ............................................................ 110  
  Green BuildingMaterials ......................................................................................... 117
Dieva Daba Strategic Framework

<table>
<thead>
<tr>
<th>Ecological Outputs</th>
<th>Overarching Objectives</th>
<th>Mission / Values</th>
<th>Vision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regenerating localecosystems through sustainable forestry and permaculture</td>
<td>&gt; To create a group of 3-5 families, who share the vision of the project and become the core of the community.</td>
<td>The intentional community works to expand a new paradigm of human presence in Earth, based in the interconnection of all life forms and their mutual support. It promotes and organizes Learning Programs and host people who participate in experiential learning opportunities.</td>
<td>The intentional community is an inspiring model of sustainable life, where people and Nature thrive.</td>
</tr>
<tr>
<td>Ecologically low-impact, natural and local material buildings</td>
<td>&gt; To establish connections with local authorities, local and international institutions and local people that supports the project.</td>
<td></td>
<td>It participates in the transition towards a new model of society where love, collaboration, trust and respect for all living beings lie as core values.</td>
</tr>
<tr>
<td>Renewable Energy</td>
<td>&gt; To construct the buildings and infrastructure for the community in an ecologically sound and affordable way for the prospective community members.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On site or locally produced, organic food</td>
<td>&gt; To regenerate the natural environment by increasing biodiversity of wild species through the Commons Forest Trust.</td>
<td>The community supports the re-localization of the bioregion's economy, knitting networks with neighbor villages and creating economic opportunities for the local people.</td>
<td></td>
</tr>
<tr>
<td>Natural processing of greywater using constructed wetlands</td>
<td>&gt; To develop a Learning Program based on the 4 dimensions of GEDS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composting techniques to close nutrient cycles like compost, dry toilets</td>
<td>&gt; To create new economic opportunities in the bioregion, which involve local people and support the local production of goods through the CSA Cooperative and organic farmers' network.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing different dry meadow, aquatic and other habitats by humanaction</td>
<td>&gt; To make the project visible locally and internationally.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beautiful, complex and rich biodiversity influencing every human being consciously and unconsciously</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Introduction

Dieva Daba community is a project born from the certainty that alternative ways of human presence on Earth based on values as respect, trust, collaboration and love, are not only feasible but the answer to the global crisis that our species is facing. A holistic worldview lies at the center of the community's beliefs and drives its actions. It is grounded on the interconnection of all life forms that are part of a greater whole, the appreciation of diversity, the acknowledgement that humans are the conscious expression of Nature and, thus, Her stewards. The meaning of Latvian - Dieva Daba is God's Nature, representing the appreciation and interconnectivity, oneness of humans and nature.

The community will be formed by a group of families that will settle down in a plot located near the Latvian village Krote and other members that will participate in the different projects developed in the community, all of them sharing the same vision, mission and goals. The group will set up the appropriate structures and procedures that support the empowerment and personal development of its members. Decisions will be made following fair, inclusive and operational procedures, including consensus as a major asset for relevant decisions that the whole community can support. Leadership will be distributed among all community members and celebrations will be the glue that connects members with Nature, each other and themselves.

The community is intended to be a model of regenerative culture which can inspire people and communities in the transition towards a peaceful and sustainable lifestyle within the boundaries of our planet. Everyday life aspects in this community are designed to have minimal ecological impact: buildings will be constructed using local natural materials, water and nutrient cycles will be as much as possible closed in the plot, energy will be produced through renewable sources and carbon footprint will be minimal or positive by reforestation. Finally, a big percentage of food will be produced on site using agroecological techniques. Dieva Daba community will be a seed of transformation in its Latvian bioregion, where it will be integrated through several economic projects developed by the community like the creation of a pioneer Educational Centre in Sustainability, the reforestation and regeneration of the region’s landscape and the support of the
local economy through the foundation of a Community Supported Agriculture cooperative. As a weaver of a bioregional network, the community will create links with other groups of natural allies and potential opponents, in order to knit a vibrant sustainable social fabric that participates in the transition to a new regenerative culture in Latvia.

Overview
Tālivaldis Kalns grew up in a beautiful, natural place of Latvian forests and meadows. Back then, as an average, socially active teenager, after school he and his schoolmates used to play together with...guns, rifles, mines and other leftovers from the Second World War. During their games some of them lost fingers, arms, and some even died while playing with mines. In his early childhood, shortly after the war, there were German, Russian, Latvian corpses just right next to his home, at the ex-war front. Just after the war, as everything was scarce, he and his family used the clothing and boots from the dead army men resting in the nearby forests. At one point, the corpses there were so accepted, that children used to construct wooden ice skates with the iron blades of war rifle bayonets to skate on the frozen lakes and rivers.

Talivaldis Kalns grew up in the current territory of the planned eco community Dieva Daba. He is my grandfather. The land was owned for three generations by the family Kalns and then symbolically sold in 1991 because of several reasons. I, Karlis Kalns, as a child often visited the places of Dieva Daba. There, with my grandfather and family, we gathered wild berries, mushrooms and apples from an apple tree, which was planted in honor of the birth of Talivaldis, on his first birthday, back in 1934. Other apple trees, in honor of his cousins and brother, are still there and still producing apples for the same family and nature, around already for 94 years. I already as a teenager felt very bound to this place, because of the pure nature, biodiversity, absence of background car and city noise, and pure creation of God - God’s Nature – exactly what “Dieva Daba” means. The stories of my grandpa amazed me... And I still sort of felt them; I felt the roots of them in me and that particular place.

Before the war, Talivaldis and his family built their own house from locally sourced clay bricks,
which were made simply by burning and forming. During the war, the house was bombed and completely scattered in 1945. After the war, some of the dead army man corpses were never moved and my grandpa says, around 13 corpses are still in the territory of Dieva Daba. Latvia during the war times was a very sensitive edge between the Russian and German armies, who moved back and forth many times destroying a lot on their way. I am an edge myself. I daily carry Russian, German, Latvian, Lithuanian and Swedish karma and blood in me, that is who I am.

Today, in 2017, I evaluate and learn from the past and want to transform it through the present moment into the future, through this project. Today, in 2017, Michael, Alejandra, Teresa, and I have created this project, where empathy, love, collaboration, trust, and respect for all living beings shall lie as core values. Today we understand how important it is to do organic gardening with high functional biodiversity. Today we value the fresh air, clean water and beauty of thriving nature and community around us, which will be supported and socially promoted through this project of Dieva Daba.
Above is a photo of family Kalns on 22.06.1934 at "Lejinieki", the place where Dieva Daba will emerge. The 8 months old baby in the bottom left corner of the picture is Talivaldis Kalns. They are wearing traditional Latvian, self-made linen clothing with traditional symbols for protection, prosperity, yields. One of the symbols is swastika, which is rooted in Latvian culture for centuries, perhaps even millenniums (Dhamma, 2011). More pictures can be seen in the Appendix.
Location

The red marked spot is the project area 80m above sea level (https://www.kadastrs.lv/#, 2017)

Here, an area of 9ha potential land is marked red. The bordering areas are possible to add as well, as they are mostly privately owned and extensively used for moving once a year.
Approach

The team is composed by Michael Hazel (UK-Austria), A. Johnson (Spain), Karlis Kalns (Latvia-Switzerland) and Teresa Pinheiro Ortega (Spain) who worked together between July 24th and September 24th, 2017.

Karlis Kalns was the promoter of the case study and the proposal was to help develop his dream of creating an eco-village in Latvia on a plot of land that once belonged to his grandparents. Before we started working together we had some information about the site characteristics, its potential and a general intention was outlined: the idea would be to form a community with a core group of 4-5 families living on individual plots of land with some common grounds and shared assets.

The approach to design has been distinctively collaborative, highly participative and from a whole systems perspective. We decided at the outset for a model of horizontal leadership and each team member would be responsible for coordinating one of the dimensions without necessarily being an expert in that area. We met once a week, sometimes twice, for 1-2 hours through a conference call. With a shared calendar we were able to post our availability and arrange meeting times when all of us could be present. We rotated roles as facilitator and minute taker and all our minutes were archived for easy reference. At our meetings we tracked our progress through our “Project Hub” and discussed and reflected on the content of the project. Often we approached questions from the point of view of all dimensions, thus always providing multiple perspectives. Although we sometimes had an agenda to follow, this collaborative process would bring about new insights and ideas that would move the project forwards in unpredictable ways. When something shifted in one dimension, it had implications for the other dimensions too and a process of adaptation followed. After these discussions, the coordinator of each dimension would write an initial draft and the other team members would collaboratively add input or make suggestions for changes using online editing tools. We worked at a pace that allowed us to move to the next stage together when all team members were ready. In the compilation stage, new connections across the dimensions formed, opportunities arose for cross-referencing and we made sure we were using the same terms for the same concepts. The work has evolved, making the whole greater than the
sum of its parts.

The following part of this report integrates the four dimensions in four chapters: Worldview, Social, Economic and Ecological. As explained above, none of the dimensions would be understood as a standalone chapter and we hope that the reader will be able to weave the interconnections and relationships between them all.
Worldview Dimension
In the Oxford English dictionary, worldview is defined as:

The overall perspective from which one sees and interprets the world.

A collection of beliefs about life and the universe held by an individual or a group.

To this extent, the worldview of the Dieva Daba project cannot be specifically defined through words or images, but only reached through action and direct experience of the community life and activity. It must be understood that the worldview is an ever evolving process and not a fixed set of values.

The following information can be used to glimpse at parts of the worldview of the community but over time, this will change and evolve and be replaced by influences from outside the community and reflections that emerge from interactions within the community.

**Understanding and Accepting Diversity**

The formation of a community requires from the outset an appreciation of diversity; a worldview that integrates the understanding that all forms of healthy life are collections of symbioses and a healthy balance of collaboration and competition between diverse life forms; this is true for animals within ecosystems, character traits in groups of animals, collaboration between organs within each individual animal, competing and collaborating bacteria in the organs and so on and so forth.

The healthy functioning of an eco-village, which includes daily life and work on community projects and goals, integration of the local community and dealing with issues such as regional and national politics requires an acceptance of diverse worldviews.

**Spiral Dynamics - Diversity of Worldviews**

A tool used to better identify and move through the obstacles that can be faced when dealing with diverse groups of individuals, Dieva Daba will approach the issue using the Dynamics framework. This will help us to:

- Align efforts to the natural motivational flows in people;
❖ Build more engaging and empowering environments;
❖ Reduce conflict and foster collaboration among leaders, teams and groups
❖ Look through new eyes at old problems.

Spiral Dynamics identifies ‘Memes’ which can be viewed in relation to each other. To use an example; Chapman Brown's sustainability attempts to conceptualize and aggregate the worldviews surrounding sustainability.

These are:

Eco-Guardian-romantic ethos - Respects Nature; return to lost ecological paradise; “tribal”.
Eco-Warrior - heroic ethos - Conquer Nature; reject civilization; fight “the system”; macho
Eco-Manager - stewardship ethos - Manage Nature from secular or religious framework.
Eco-Strategist - rational ethos - Manage, use, and exploit, Nature for profit and play
Eco-Radical - equality ethos, Postmodernist; save Nature for humanity and for its intrinsic value

Using these worldviews one can identify where each meme takes shape and through which groups they are represented in relation to the project.

Most importantly to note is that all of these worldviews have more complementary aspects in relation to the underlying goals of the eco-village project; which, as a whole, could be mostly identified with the Eco-Radical meme. The last column of the table gives examples of how these complementary aspects could be shared and communicated. Being able to identify these complementary aspects is part of the overarching worldview of the community of accepting diversity and finding ‘win-win’ solutions for everyone involved in the project. It will help us to connect with other groups and individuals and is an important tool for networking (see also Social dimension chapter - Bioregional networking). The vision, mission and objectives at its core supports the spiritual development of individual and community with shared values, acceptance, trust and love in all forms. Finding acceptance of the diversity of human beings, community
members will be encouraged to see as a spiritual quest and the potential in diversity is desired to be seen and used for strengthening the community.

Science and Spirituality

"The notion that science and spirituality are somehow mutually exclusive does a disservice to both."
- Carl Sagan (American astronomer, astrophysicist, author)

Applying spirituality to our worldview is one of the cornerstones of the Dieva Daba project.

We recognize that many of the current challenges facing humanity requires, not only an improvement and advancement of technology and its availability, but also, an adjustment to the worldview that shapes and molds the use of this technology, the society we live in and our relationship to our living environment.

The mechanical worldview currently offered by reductionist science, although completely accurate, aims primarily at conceptualizing the individual parts of a whole system. Applying spirituality to this worldview, still gives room for this conceptualization but also sees the system as a whole focusing less on individual parts, but the multitude of relationships between these parts.

This addition to the worldview can be best described in some of the discoveries of Quantum physics, where electrons can be viewed as both waves and particles. Both are true in their own right; however, it is impossible to explain all of the behavior of an electron without using both perspectives.

Seeing a system as a whole, more than a sum of its parts, as well as understanding each individual part can be described a 'holistic worldview' and is a fundamental element to the way of thinking and action of Dieva Daba.

Bridging the gap between science and spirituality is crucial in being able to communicate and to translate the holistic worldview of the community with those coming from a more scientific background.
As Einstein famously said:

“Science without religion is lame, religion without science is blind.”

One of the ways this will be done is to offer seminars and courses at the Dieva Daba learning center, which will concentrate on bridging this gap. This will include topics such as:

- Quantum physics from an informative perspective
- The Nature of consciousness
- Transpersonal Psychology, Psychotherapy and Clinical Studies
- Inner Ecology, Collective Psyche and Social Transformation
- Psychedelics – Science, Spirituality and Therapeutic Potential

These topics offer us an opportunity to see the world in a different way; in a more connected, harmonious universe of which we, individually, are an indispensable part of. It is part of the new story.

**Telling a New Story**

“The universe is made of stories, not atoms.” Muriel Rukeyse

Since the beginning, man has asked questions about his place in the universe.

Who am I? What's important in life? How does change happen in the world? Where do I come from, where am I going?

The answers to these questions were previously found in myth, religion and folklore passed down through generations - the answers are not given directly, as in facts, but told through stories.

The modern civilization is undeniably facing crises of all kinds, at all spectrums of life - socially, economically and ecologically. As mentioned, we believe that the worldview is the most fundamental and crucial element that requires transformation in order to deal with these crises efficiently.

This transformation of worldview, this development of consciousness, can only be achieved through the telling of a new story, which no longer disassociates man from nature as if it werean
external entity but through our daily activities, ceremony, ritual, art, song and dance, tells and confirms mankind's unavoidable connection with the ecosystem which they depend on for all of their life-support systems and the connection they have with each and every other being that exists; most directly, the people they live with.

This story can be referred to as 'The story of inter-being' and describes man's place in the world in terms of relationship.

**The story of inter-being and mankind’s relationship to Nature**

Nature is an integral, central part of the design of Dieva Daba. In material terms, nature will play a core role for the survival and wellbeing of the people living in the community - this reliance will in turn imbue a sense of connection and empathy with the wellbeing of the surrounding nature. Dieva Daba aims to redefine the meaning of 'Nature'.

As we see it, Nature is not just an external element, consisting of trees, plants and wildlife, but can be seen as an indistinguishable constant, which the community itself, and each individual, is an irrefutable part of and contributes to with each of their actions.

The project, through its work and being, is designed to be a transformative tool, which demonstrates this interdependence by telling the story of inter-being.

Because inter-being, a cyclical process, cannot be easily described in written words (which are finite in their construction) a rough sketch has been provided to show the relationship between each of the activities which, in practice, will show the interdependence of the community with the nature around them which in turn will fortify the wildlife physically and also strengthen the relationship of the community with the wildlife, further deepening the interdependence.

To add some more detail:

- Nature is the center of the web, crux of the matter and the global container of the piece.
- Surrounding nature are the 4 main activities of the community that are directly related to the physical environment: sustainable forestry, permaculture, spending time in and
creating natural beauty

❖ The other elements surrounding these are connected to these activities, for example, constructing lakes for swimming is an outcome of ‘creating natural beauty’.

❖ These activities and their creations will in turn, develop the 3 main foundations that uphold the relationship the community will generate and maintain with Nature. They are - “Interdependence”, “Appreciating Worth and Beauty” and “Biodiversity and Health”. These 3 foundations influence each other and are intertwined with each of the activities, elements and complete full circle with the inter-being with Nature.

To see this whole picture is to see the holistic approach that will be nourished within the community in regards to its relationship with Nature - the vision is that the community will, not only understand cognitively, but behave in a way that appreciates that it is not merely ‘a part of nature’ but that it is Nature itself and that all must be cared for with the same sensitivity and receptivity - the health and biodiversity of the surrounding life, will become a mirror of the health and diversity of the community itself. Caring for the local wildlife and forests, will be part of our duty of stewardship.

Stewardship and Care

Based on calculations made by the Global Footprint Network, by August 2, 2017, through overfishing, overharvesting forests, and emitting more carbon dioxide into the atmosphere than forests can sequester we had used more from nature than our planet can renew in the whole year.

The analogy of the apple tree, which, after eating all of its fruit, is consumed as firewood, every year removing more and more, until the apples that are replenished become less and less each year is an accurate metaphor for what is happening to the Earth with each moment that we are consuming, whilst returning nothing to the source of this energy flow.

Understanding this concept, Dieva Daba recognizes the necessity for humans to interact with our local surroundings and environments in a caring, guiding and conscious way - promoting, not just
sustainability, but regeneration; allowing natural systems to recover and provide us with an abundance of all that is necessary for a healthy and fulfilled life.

The honored responsibility of stewardship, allows in our actions to reflect the new story of inter-being that we carry with us at Dieva Daba. Stewardship will involve the following activities:

**Sustainable forestry:**

The forests surrounding the community are an integral part of the design and, as seen in the above image, important for both the wellbeing of both the community but also the biodiversity and health of local eco-system. Primarily, the forests will provide community members with wood as fuel for winter, but here are some of the other tasks carried out by the forest [1]:

- Provision of food
- Filtering and storing drinking water
- Improving air quality and many other ecological functions
- Providing timber, pulp and other raw materials
- Providing medicines and materials for pharmaceuticals
- Providing spiritual and cultural enjoyment

The forests will be managed in a sustainable and regenerative way. This requires selective logging (leaving specific species or ages of trees to develop to maturity), which will help to improve biodiversity but also for beneficial economic reasons. Some of the areas will also be left completely wild, providing undisturbed habitat for a range of species of birds, plants, insects and larger mammals - including regional species such as wild boar and red deer, roe deer, lynx, wolf and others and also providing nesting places for species of birds, such as the rare and endangered species of spotted eagle, red and black kite, eagle-owl, roller and green woodpecker.

With these sustainable and regenerative methods of forestry, we aim also, in the long run, to influence the local logging industry which could do with some improvement in terms of sustainable
techniques and improving forest health.

The forests will also provide food, herbs and medicines and be a place of natural beauty in which people can spend time in contemplation and exercise.

**Permaculture:**

Food will be grown using permaculture methods, taking the dynamics of the whole of the community into account (section Permaculture Design in Ecological Dimension offers more detailed information on our permaculture design) - this includes waste treatment, carried out by constructed wetlands and composting (providing environment for species of insects and small mammals such as hedgehogs).

Crops like all sorts of grain, beans, peas, vegetable are traditional and are to be supported. Many parts of Latvia are mono-culture and there is a stark contrast in the ecological biodiversity in these areas. Meat production, being one of main climate change causes, will be strongly limited or absent, although it is understood that this is a cultural element as well but animals may be kept and integrated as part of the cycle to produce manure.

The edge-effect will be taken advantage of within growing techniques and areas will be sought out to support both food-producing plants but also to provide environment for species, for example, on the edge of lakes and constructed wetlands.

Our CSA project will also develop ties with the local community, helping to spread the seeds of our worldview to provide healthier, more sustainable food to the people in the area.

**Creating Natural Beauty:**

The area of the community will be a place of astounding natural beauty; lakes, swimming holes, art and unobtrusive housing - all surrounded by regional trees and plants. This will both help to inspire lifestyles, building techniques and social systems but also provide practical solutions to physical needs. A lake will be created which will benefit all aspects of the community's nature with relationship, provide a place to swim and be a beautiful attraction for people visiting.
Cob housing will be made possible from the clay-rich soil, and will be designed and integrated as part of the landscape.

Spending time in:

Although not necessarily done for the purpose of a specific outcome, simply spending time in the forest, walking, swimming in the lake, harvesting food from the garden, taking part in ceremonies in the forests or just meditating under a planted tree, will help to build and strengthen the relationship of the community with the natural wildlife, and promote the desire and willingness to further support and care for the local ecosystems by community members and visitors.

Spirituality and Ritual

The English Oxford Dictionary defines ‘Spirituality’ as follows:

“The quality of being concerned with the human spirit or soul as opposed to material or physical things.”

Spirituality is another element which can be considered under the guise of Nature and is focused on the quality of the relationship of a person has with his or her self; their own personal nature. This relationship, helps to define how a person relates to the people and objects around him or her and is the basis of spiritual growth, which is an essential axiom of the Dieva Daba worldview and can be cultivated through various forms of spiritual practice, formal or informal, which we hope will become part of daily life at the community.

We aim to promote and reflect on the ancient wisdom and traditions of the Latvian people (dievturība - see below), and incorporate and translate their beliefs with new-age mysticism and techniques and mythologies brought from the East out of traditions like Buddhism and Hinduism such as yoga, mindfulness and Zazen (sitting meditation).

At the same time, we are aware that an egoistic identification with some group, nation or ideology can be stronger than common sense (as seen from historical religious campaigns and senseless wars fought in modern times!) and therefore do not aim to push any spiritual ideology upon
anyone. It is a common value and respect should always be present in regard to anyone's personal beliefs.

The history of spirituality in Latvia - Dievturība

For the Latvians, dievturība was their way of life (dzives zina) and ultimate concerns were not couched in abstract dogmas or analytical cannons. The highest aim of human life was to live in harmony with Nature and other members of society — to follow the will of the Gods. Personal worth and integrity was expressed in terms of possessing the many Virtues, and there was no need for conceptualizing such religious metaphors as sin, atonement or redemption. [3]

The Latvian language does not have a word for 'to have.' The Latvians say 'to me is.' Utilizing the old Baltic form 'turēti,' Brastinš called a person who holds or possesses Dievs (God) according to the ancient Latvian tradition, a Dievturis. The name has become part of the Latvian language and a Dievturis, following perennial wisdom, is literally a God-keeper or possessor. [4] The way this belief system - dievturība, was passed on was through 'dainas' - these are short rhymes which encapsulate an idea or concept. The Latvian community proudly kept much of its wisdom in this way. Here is a translated example:

“The skylark sings higher than all other birds;

“Dievs’ wisdom is higher and beyond this entire world”

Typologically, the ancient Latvian religion is an agricultural religion. The movements of the heavenly bodies and the agricultural cycles which they represent, determined a set, never-ending, but highly structured spiral of existence. The solstices and equinoxes determined the basic
framework for this structure. To these correspond Jāni (summer solstice), Winter festival (winter solstice), Lielā diena/Easter (spring equinox) and the many autumnal harvest festivals (fall equinox).

Interspersed among these are the many planting, harvest and other communal celebrations. All these cyclical festivities determine sacred times and rituals with appropriate songs, dances, foods and other activities. Dievs and other deities are welcome participants in all of these rituals. It is also characteristic of these festivals that some form of fire and honey mead is always present.

The cosmic clock which determines the rhythms and patterns of the festivities is, of course, the Sun. There are literally thousands of Sun-dainas consoling, advising and providing a role model of the individual to follow. The mythological astral family provides the proper metaphor for the ever-recurring manifestations on earth: birth, growth, fruition and death. Through this metaphor the agricultural religion of the ancient Latvians is at the same time an astral religion — as above, so below. [2]

Corresponding to the birth, growth and death in Nature, the Latvians also ordered their lives by the life-cycles of the people themselves. The beginning, middle and end of life — the rites of passage — were also marked by sacred and festive celebrations: the first related to the birth (name-giving ceremony), the second to the courtship and wedding ritual, and the last to death. Death was considered also a celebration, a beginning of a new cycle. Importantly to note, is that all varieties of belief, spiritual practice and worldview will be supported by the community, as long as the mission, vision and goals of community are seen as a shared value. The most crucial understanding to be shared within the community vision is that all words and beliefs are merely translations of the divine; the divine can only be accessed through direct spiritual experience; through our open awareness. This will be guided through rituals which enhance our connection with nature and each other.

Spirituality in practice

Using this rich history as inspiration, it is intended to use the following rituals to provide a
framework for the community that connects us with nature, ourselves, our community members and a higher source of energy (see also - Social Dimension - Celebrating life: art and creativity.

Dieva Daba Community Celebrations:

❖ Seasonal rituals:
  o Lielā diena/Easter (spring equinox)
  o Jāni (summer solstice)
  o harvest festivals (fall equinox)
  o Winter solstice
  o Natural events (for example, migrations and astronomical events)

❖ Life cycle rituals:
  o Naming ceremony
  o Rites of passage aimed primarily at males of the community but also can be done by women.
  o Marriage ceremony
  o Death ceremony
  o Members joining/leaving community

❖ Regular rituals:
  o Group Meditation/Yoga
  o Meditation or Vision quests in nature.
  o Expressing gratefulness before meals eg. holding hands in silence
  o Sweat lodge

The sweat lodge is an ancient American Indian and European ceremony, giving attention to the cycles of life
and death and the passing of the seasons.

Again, most of these rituals and ceremonies are not obligatory, but simply ideas and intended to be also fun and light hearted, intending to bring people in the community together by holding space and focusing energy on important events in memorable ways.

Our vision of a spiritually engaged and advanced practitioner, is not someone that is there to teach others, but someone to serve as a present example - it might inspire someone to be similar, but it might as well not. Referring to 9ha plan in ecological dimension, a sweat lodge of cob is planned as a ritual place right next to community pond.
Social Dimension
Dieva Daba common vision

Vision

Dieva Daba community is an inspiring model of sustainable life, where people and Nature thrive. It participates in the transition towards a new model of society where empathy, love, collaboration, trust and respect for all living beings lie as core values.

Mission

This intentional community works to expand a new paradigm of human presence in Earth, based in the interconnection of all life forms and their mutual support. It promotes and organizes Learning Programs and host people who participate in experiential learning opportunities. The community supports the re-localization of the bioregion’s economy, knitting networks with neighbor villages and creating economic opportunities for the local people.

Objectives

- To create an initial group of 3-5 families, who share the vision of the project and become the core of the community.
- To establish connections with local authorities, local and international institutions and local people that support the project.
- To build the buildings and infrastructure for the community in an ecologically sound and affordable way for the prospective community members.
- To regenerate the natural environment by increasing biodiversity of wild species and crops.
- To develop a Learning Program based in the 4 dimensions of GEDS.
- To create new economic opportunities in the bioregion, which involve local people and support the local production of goods.
- To make the project visible locally and internationally.

Governance
Dieva Daba community is intended to be a diverse ecosystem of living beings and will welcome people with many different perspectives who share the common vision. Within the community we distinguish two groups of members depending on the degree of involvement:

- The core group of families who are permanent residents and own their households in the plot. This group will share the common vision of living in a sustainable and resilient way and will agree some coexistence rules in order to live in a peaceful and healthy way.
- Non-resident partners, both individuals and organizations, that will be part of the projects developed in the community although they do not live in plot enduringly. They will share structures to carry out the objectives of the educational, re-localizing economy and reforestation projects. Among them, there will be volunteers and interns that will collaborate in the projects and will live in visitors' huts located in the common land of the community.

**Group membership protocol**

The creation and expansion of Dieva Daba community will be a living process, which will evolve during time and whose particularities will depend on its members. As in any complex system, uncertainty will be part of it. However, in order to drive the process in the direction of creating a thriving and peaceful community, some guidelines will be established as a membership protocol. This protocol will be adapted to the different stages in the community evolution and the specific characteristics of each group within the community (core group and non-residents).

In the initial stage, the project promoter (Karlis Kalns) will look for families that may be interested in becoming part of the core group members of the community. Once the group is formed, it will be advisable that they live together in a common place within the plot, so that they get to know each other and attune to each other.

In subsequent stages of the community evolution, the membership protocol will follow these general aspects:
A. Once a month there will be an open day for visitors and candidates, to get to know the community, like an experience day. This will be a way of getting to know each other and could be a requirement before discussing the membership protocol.

B. Candidate’s introduction to the group in a two way process:
   a. The candidate gets to know more thoroughly the current structures and processes of the group:
      i. Vision, mission and objectives
      ii. Membership protocol
      iii. Decision making procedure
      iv. Formal roles
      All of the above will be part of the common agreements that will serve as a reference in the periodical reviews.
   b. The group gets to know the candidate, their expectations, what they wish to contribute…

C. The candidate approves the common agreements. Otherwise, there will be a meeting with the group to discuss points of disagreement and see proposals that could improve the existing structures or processes. The approval or rejection of the proposals will be done through a consensus process involving all members. According to the result, the candidate decides whether to join or not the community.

D. Periodical reviews period so that members share how things are going. It finishes when both the candidate and the community consider it is the right time. During that period:
   a. Members will work on personal skills in order to have healthy relationships: non-violent communication, deep listening, compassion, awareness. There will be:
      i. Introductory workshops for new members
      ii. Periodic workshops for all members
   b. Members may discover possible incompatibilities or conflicts that could arise. They should be solved with the help of a facilitator.
   c. There will be periodical gatherings where members will share how things are going.
E. Any important decisions, like acceptance or rejection of a new community family that wants to settle in the plot should have the approval of the core group of families (maybe not necessarily all members).

F. Decisions might be taken by considering not only rational arguments but also forms of body-knowing, values and a spiritual dimension. By doing a group meditation to tap into a deeper state of being, decisions could be also informed by intuition. This type of decision making in praxis is seen in eco community Senrueti, Switzerland (Sennrueti).

G. There will be a ritual ceremony for new members.

H. In the case that a member of the group is not following the common agreements and the situation is unbearable, the community members will organize an assembly where they will decide by consensus where this member stays or not in the community.

I. If a member leaves the community:
   a. He will transfer his duties to the person who is substituting him.
   b. In case he has invested any amount of money in the community, he will recover a certain percentage of it from the pension funds and dividends of the community.
   c. There will be a gathering of all members to farewell the member who leaves.

Decision types and scope

The decision making process should be fair, inclusive and participatory, so that all voices are heard and the group can take advantage of its collective intelligence. Besides, it should be also effective and operative.

Several procedures will be available to make decisions depending on their type and each one will involve different members. We distinguish different types of decisions depending on their importance:

a) Operative decisions, which are related to daily issues or specific tasks of working groups
within community projects.

b) Less relevant decisions that involve different groups within the community.
c) Relevant decisions, which do affect the values, vision, mission, objectives or structures of the community.

Besides, there are different scopes that should be taken into account in order to know which members are involved in the process:

- there could be issues that are related exclusively to the core group of families,
- others that could involve just a specific group of the community
- and others that may implicate the whole community.

In general, people directly or indirectly affected by the topic to be decided will be involved in the decision process. However depending on the importance of the decision, either a set of them or the full group will be taking the decision.

**Procedure to make decisions**

According to the type of decision a different decision-making method will be used:

a) Delegating decisions to the working group.

   This procedure will be used both for operative and less-relevant decisions involving different groups. All members or groups affected are informed and have the background knowledge to participate in an equality fair process:

   - Simple issues can be decided by one person, who informs the rest of the groups of his/her decision.
   - More complex issues are discussed within the group, there are meetings to solve doubts and the final decision is taken through averaging decision process.

b) Consensus with voting fallback.
This process will be used for relevant decisions. A sunset clause could be added for experimental implementations; so that their results can be evaluated after a certain period of time. Figure 1 shows a flowchart of consensus process.

The group will gather whenever it is needed to make decisions. Work groups can self-organize for operational decisions. However, if there are many issues that should be decided by consensus, they should be planned with enough space between them so that the atmosphere for each process is healthy and all members are motivated.

Meetings will be facilitated to be more fruitful and preserve the group cohesion. They should not
last more than one hour and a half and there could be more than one per week, so that the decision process is not too long. In order to establish the date, a doodle will be done so that a majority of people can assist to the meeting.

The group will agree the following issues for meetings (BRIGGS, 2013):

The bare minimum:

- Use a facilitator
- Everyone participates
- Speak only for yourself (make “I” statements, rather than speaking for the group)
- No interrupting
- Seek a solution

Also useful:

- Begin and end on time
- Have an agenda and stick to it
- One speaker at a time
- Listen with respect
- No personal attacks or blaming
- Confidentiality (when appropriate)
- Silence = assent (If you do not say anything, it means you agree).

Other agreements used by some groups:
• Alternate men and women speakers
• No one may speak twice on a subject until everyone who wants to speak for the first time has had a turn
• Each speaker who is physically able must stand to speak (This is especially useful in large groups, or in groups where individuals tend to sit back in their seats and expound at length)
• Order of speakers is (1) people from other countries (2) people of color (3) young people (under 20 years old) (4) women (5) men
• Express yourself clearly and honestly
• All are treated with respect and as equals
• We agree to disagree.

The community will ensure that the decision making process will be truly participatory, inclusive and fair by integrating the following measures:

- Involving a facilitator. This role can be done by someone of the community, which is not involved in the decision process or by an external person.
- Workshops to develop inner skills (compassionate communication, deep listening, awareness) and to get to know the decision making process.
- Open meetings so that anyone of the community can attend and listen to what is being discussed. Besides, any willing person of the community can participate in any meeting with the responsibility to go through the whole process.
- Transparency in what is being discussed: publication of the minutes of the meetings for the whole community.
- Inviting experts whenever they are needed so that members have proper information.
- Rotating roles in groups so that everyone is involved. Everyone makes proposals.
- Confidentiality if needed.
- Feedback among the members of the groups.
Decisions will be communicated to the group in different ways:

- Written, so that everyone can confirmed that she/he has received the information.
- In person, in meetings to have feedback.

**Prevention and management of conflicts in the daily activities of the group**

Group cohesion and communication are fundamental aspects when dealing with conflicts. To promote them, every morning all members of the community will have the opportunity to attend a brief assembly for announcements from different work groups and a creative sharing (a song, a reading, a physical exercise).

Members should be committed to their inner personal work to prevent conflicts. They will have the possibility to do daily activities and introductory and periodic workshops in order to:

- Develop inner skills like compassionate communication, deep listening, and awareness.
- Be aware of each one's rank and privileges.
- Understand conflicts: realize what are our sources of conflicts and the process of conflict escalation.

To manage conflicts, members will be familiar with the 9 Steps to Address Conflict Positively described in (GEDS, Social Dimension – Module 2 – Understanding conflict section)

1. Create an appropriate atmosphere, based on trust and safety.
2. Clarify perceptions and misunderstandings.
3. Move from positions to interests and needs.
   - Positions and interests are negotiable. Needs are not negotiable.
   - A difficulty: In structural conflicts it is not always possible to meet every person's needs. You have to change the subjacent conflictive structure.
4. Learn to manage your emotions and the response you give to somebody else's emotions.
5. Promote the connecting elements—the “we” instead of the “you against me.” Instill the idea of a “power towards” where we all participate, instead of a “power over,” that keeps out some
people.
6. Project to the future, towards what we want to do together, acknowledging and learning from the past at the same time.
7. Encourage people to speak of their responsibility and not of their guilt. Facilitate reconciliation.
8. Identify and develop gradually workable solutions.
9. When possible, develop verbal or written agreements that everybody can accept.

Conflicts that could arise in the decision-making process will be solved with the help of a facilitator. This role can be done by someone of the community, which is not involved in the decision process or by an external person.

Personal empowerment and leadership

Dieva Daba community will be a space where creative power and leadership will be promoted to all its members. A good leader has to develop different kinds of skills addressing the different elements of leadership: oneself, the relationship with others, the context, and the goals.

Developing leadership skills

Members of Dieva Daba community will develop 4 types of leadership skills so that leadership can be distributed among them (GEDS, Social Dimension: Personal Empowerment and Leadership Skills – Holistic leadership and eldership Section). In order to develop these skills, we propose the following plan:

❖ “I” skills involve the way a leader behaves in different situations, enabling him or her to choose or create the mood, attitude, inner state, etc. more appropriate to each case:
  - high self-esteem,
  - self-confidence,
  - emotional intelligence (Goleman, 2005),
  - ability to respond to a changing environment.
Proposed actions:

- Deeping in emotional intelligence will provide the group with the skills to recognize their own feelings and those of others, control and regulate their emotional and behavioral impulses, empathize with others, develop positive thoughts, and cultivate self-esteem.

- Working with a coach will empower those people who need to enhance their self-esteem and self-confidence.

- Inner work.

❖ Relationship skills include:
  - to understand,
  - to communicate with,
  - to motivate other people,
  - to acknowledge and honor differences,
  - to recognize the different elements of the group culture — norms, assumptions, power and rank issues, etc.— being aware of the influence they have on people's behavior and attitudes, and intervening in a way that brings more awareness to the group.

Proposed actions:

- Learning non-violent communication (Rosenberg, 2003), deep listening (Bohm, 2004) will enhance the capacity to communicate with other people in a positive and healthy way, acknowledging the diversity and recognizing its tremendous value.

- Studying and practicing facilitation (Schwarz, 2002) will provide the members with tools to effectively guide a group in their processes, creating a collaborative environment and dealing with conflict resolution.

❖ Strategic thinking skills comprise:
  - to define and achieve specific objectives and goals,
  - to define a common vision everybody can support,
to find or develop the resources needed to support the group work and achieve its goals.

Proposed actions:

- Learning Dragon Dreaming as a project management tool will improve the skills to create common visions that everyone participating in a project can support, to define the objectives and planning of the project and how to find the resources to achieve them.

❖ Systemic thinking skills involve:

- to identify and understand the general context wherein the group develops their activities, from the most immediate environment to the greater social system.
- to understand and create the appropriate structures to help the group achieve their goals and realize their vision.

Proposed activities:

- Organizing special gatherings in the community to practice systemic thinking skills according to the vision, mission and objectives of the group.
- Promoting the collaboration of group members collaborate with other networks so that they widen their perspective on the situation of Dieva Daba community in its social and environmental context.

This plan will be implemented through:

- Workshops on these topics that could be organized as part of the Learning Program of Dieva Daba community or external ones.
- Activities organized by members of the community to practice these skills in different hypothetical scenarios. Members with more experience in some topics will help others that need to improve theirs.
- A shared library in Dieva Daba community, where books and other materials could be used by all members.
Personal empowerment

One fundamental aspect of leadership is the personal empowerment of the individual. The community will support its members to find their personal power and offer it in service to the group. This process will consist on three stages:

1. Assessment stage: each individual analyzes his own skills in order to recognize his strengths and weaknesses. According to them, he will need to improve some skills or he will be able to help other members to develop others.
2. Learning stage: developing the 4 types of leadership skills using the aforementioned plan.
3. Practice stage: members are included in a rotating role distribution system of leadership.
4. Mature stage: members have acquired enough experience and can support others in the learning stage and lead important or complex projects.

Distributed leadership

Leadership will be distributed among all permanent members of the community, once they have integrated the basic skills to accept this role. The role of leader will be rotated within each working group, asking for volunteers when a period has expired. One member should not repeat in the role till all members have participated. However, exceptions could arise if a member of the group is not ready to take over the role or when the group agrees that for a certain project one of its members is better prepared to take the lead.

There will be spaces and structures, supported by a facilitator, where the group will give feed-back to the leaders so that they can improve and where possible abuses, tensions or conflicts could be solved.

Celebrating life: art and creativity

Dieva Dabacelebrations

Celebrations will be a significant part of the community life. They will promote the group cohesion, reinforce the group identity and stimulate the creativity and wellbeing of its members. The
community will celebrate different events, which are summarized in

Figure 2:

- Natural and astronomical events:
  - Wildlife events, like migrations, wintering, time of zeal. There will be walks in nature to observe these special moments and storytelling about the local traditions, which can be dramatized. Resources: binoculars, books and guides, sledge.
  - Astronomical events, like special moon and planetary events in the year, meteor showers. There will be night gatherings in a special place with clear sky to observe and realize our connection with the universe. There will be music, poems, songs, meditation. Resources: binoculars, telescope, sky maps, musical instruments.
  - Harvesting. There will be a feast to celebrate and give thanks for the crops. Special meals with seasonal products will be prepared and shared using traditional recipes and new ones. Whenever the weather is good, the celebration will be held next to the crop field to reinforce the intimate connection with the land that has provided the harvest. There will be music, dance and games related with harvesting. Resources: food and drinks, musical instruments, tables and chairs, kitchenware.
  - Change of seasons and New Year’s Day. There will be a themed party according to the season that is beginning/the New Year coming.
- Social and personal events:
  - Annual festival of the Dieva Daba to celebrate the anniversary of the creation of the community. It will be a feast day where members will invite their family and friends and also people from the region related to the community. Different activities will be organized to remember the history of the community: its successes, changes, challenges, people who have participated. There will be special meals where the whole community will gather, a festival with music, entertainment, artistic expressions: poems, speeches, exhibitions (pictures, photos, and video), and dance. Resources: food and drinks, an assembly hall with scenery, musical instruments, tables and chairs, kitchenware.
  - Welcoming/Farewell of members or people who have been in the community in a stage. It will be celebrated with a special meal and a feast. Resources: food and drinks, musical instruments, tables and chairs, kitchenware.

- Projects achievements, ending of educational activities like workshops, courses.
  - Completion of projects/courses/workshops. There will be a party where the people attending or participating in courses/workshops/projects will gather together to celebrate its completion. There will be the diplomas delivery (when it is appropriate), food and drinks, music, dance and any kind of other artistic expressions that the people participating want to share.

One of the most important celebrations is the annual festival of the community. It will be a very special occasion to gather the community not only in the days of the celebration, but also in the previous weeks to prepare it. It could be compared to the local festivities of a village. These days will be special moments of sharing not only among the members of the community, but also with their families and friends, who will be invited to the celebration. Members will reconnect with the vision, mission and values of the community, with their mates and with their inner energy in order to continue working to accomplish their common objectives. The successes and obstacles encountered
in the way will be acknowledged and celebrated and the objectives of the new annuity will be exposed.

**Dieva Dabarituals**

<table>
<thead>
<tr>
<th>Celebrating</th>
<th>Rituals</th>
</tr>
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<tbody>
<tr>
<td><strong>Nature</strong></td>
<td></td>
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<tr>
<td>- Wildlife events, like migrations, wintering, time of zeal.</td>
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<tr>
<td>- Astronomical events, like special moon and planetary events in the year, meteor showers.</td>
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<tr>
<td>- Harvesting.</td>
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<td>- Change of seasons and New Year’s Day</td>
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<tr>
<td><strong>Community</strong></td>
<td></td>
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<tr>
<td>- Annual festival of Dieva Daba</td>
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<tr>
<td>- Welcoming/Farewell of members</td>
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<tr>
<td><strong>Achievements</strong></td>
<td></td>
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<tr>
<td>- Completion of projects/courses/workshops</td>
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</tbody>
</table>

![Figure 2. Celebrations and Rituals](image)

In order to honor the community worldview, there will be rituals linked to:

- Changes or transitions in life: birth, death, maturation, marriage, entering the community, leaving the community.
- Thanks giving: to Nature, to other beings.
- The identity of the community: remembering its history and evolution, the values and vision that unite the members to create the community, the people that has been involved.
- New knowledge/skills acquired: after a workshop or course there could be a diploma’s delivery.

More detail information about rituals is described in Worldview Dimension, Spirituality and Ritual.

Calendar of celebrations and events

1st January: New Year's Day.


21st June: Jāni. Welcoming summer day and summer solstice.

22nd September: Welcoming autumn day and autumn equinox.

21 - 23 of September: Summer harvesting

21st December: Welcomingwinterdayandwintersolstice.
To be defined: Annual festival of the community.

Bioregional networking

Bioregional aspects of Dieva Daba

A sustainable human presence on Earth will be possible through collaboration among diverse regenerative communities locally adapted to their bioregions. They will create patterns and structures that will enhance local and regional self-sufficiency in order to satisfy their basics needs. They will weave networks inside networks at different scales: bioregional, national and global, that will support each other in the common goal of promoting a sustainable human civilization.

Dieva Daba project considers the fundamental aspects of a bioregional organization:

❖ Scale:

The community lifestyle and the activities carried out are adapted to the place that people are inhabiting:

- building materials based in clay and straw,
- local varieties of crops for food production,
- local species for the reforestation project,
- collaboration with local community,
- selling their products in local markets,
- obtaining energy from the available resources in the plot like biomass and wind power.

So its impact and objectives are focused at the local and regional level.

The model implemented in the community could be replicated in other places of the bioregion, considering the specificities of the particular place.

The community will participate in different scales: from local to regional, national and international:
- The community will establish connections with other groups in the region to enhance the resilience and the impact of the community projects.
- Also at national and international level there will be collaboration with other organizations.

❖ Economy:
There will be stable means of production and exchange within the community, that will satisfy almost all its basic needs from the regional economies and its surpluses will be exchanged in local and regional markets:

  o They will produce a high percentage of their food and energy in the plot.
  o Education is a cornerstone of Dieva Daba community project, so their members and local people will have the opportunity to fulfill this basic need inside the community.
  o Material goods will be obtained from local businesses and craftsman. Those products than cannot be found locally will be imported from the closest region.

Members' lifestyle will conserve the resources of the plot they inhabit. They will also preserve the relationships and systems of the natural world by enhancing the biodiversity of the ecosystems and the connections between them.

❖ Polity:
Power will be distributed within the members of the community. The decision making process will involve those members directly related to the issues discussed, which will increase the decentralization and the operability of the community.

❖ Society:
The community will look to collaborate with the local government and local institutions for the projects which require local support like a cooperative of farmers, the environmental Learning Programs, all building permitting, land use change plans (from agriculture to forest or agroforestry), geodesic map measurements or approval.

Other projects, like the reforestation of the plot will require the support of regional or national institutions. For the Learning Program, the community will look for partners both at
local and regional levels (experts in different topics adapted to the bioregion) and at international one, cooperating with Gaia Education.

The community will be linked not only to the rural life but also to the city, through a Community-supported agriculture (CSA) project, which will offer the possibility to participate to people both living in the country and the nearest city (for more information about the CSA project, see Economic Dimension chapter, Social Enterprises section). The educational activities and special events will be diffused also in the near villages and the cities. These projects will be the bonds of a symbiosis relation between the countryside and the city.

Bioregional integration reinforcement

Different measures will be taken within Dieva Daba community in order to reinforce its integration in the bioregion:

- The Learning Program will take into account the needs of the local people and their background in order to adapt it to their particularities. Besides, the prices of the activities will also adapt to the economic income of the people living in the area: there will be a price for Baltic countries inhabitants and participants from communities with low income and another for wealthier attendees.

- The diffusion of the activities carried out in Dieva Daba community will be strongly focused in the bioregion.

- Dieva Daba community will share its knowledge and information, its successes and failures to other communities and educational centers in the bioregion.

- The community will wave a network with other local and regional groups, inviting them to participate in the different projects.
Dieva Dabanetwork

Dieva Daba community will improve its connectivity by weaving a network which will include diverse local, regional and global nodes. This network will involve not only like-minded people and organizations, who may support the projects developed in the community, but also those who could oppose to them, in order to gain their trust and influence them.

Table 1 collects the potential participants that the community will try to include in its network whereas Figure 4 shows important features of the potential members that should be considered when planning implementation of the projects.

Figure 5 shows Dieva Daba network map, which involves four main hubs related to different topics where the community will work: education, forestry, agriculture and wellbeing. Each hub has its own potential participants, which could also have links among them. As can be seen, there are also links between the four main hubs, what implies possible links among their nodes. Dieva Daba community stays at the center of the network as an active weaver that will try to knit new links and support new weavers in order to create a healthy vibrant network.
<table>
<thead>
<tr>
<th>Participants</th>
<th>Interests &amp; Goals</th>
<th>Include in process</th>
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</thead>
<tbody>
<tr>
<td><strong>Environmental Organizations and Institutions:</strong></td>
<td>Protection of the environment</td>
<td>-Learning Program</td>
</tr>
<tr>
<td>- WWF Latvia</td>
<td>-Regeneration of landscapes</td>
<td>-Reforestation project</td>
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<tr>
<td>- Greenpeace</td>
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<tr>
<td>- Latvian Ornithological Society</td>
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<tr>
<td><strong>Educational Organizations and Institutions:</strong></td>
<td>Sustainable Learning Programs for thriving communities within planetary boundaries</td>
<td>-Learning Program</td>
</tr>
<tr>
<td>- GAIA Education</td>
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<tr>
<td><strong>Sustainable Living Organizations and Institutions:</strong></td>
<td>Creation of regenerative cultures who promote a better society based on respect, justice, peace and love of all living beings.</td>
<td>-Learning Program</td>
</tr>
<tr>
<td>- Global Ecovillage Network(GEN)</td>
<td>- Networking of sustainable life projects</td>
<td>-Reforestation project</td>
</tr>
<tr>
<td>- Tiešāpirkšana</td>
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<tr>
<td>- LatvijasPermakultūrasAsociācija</td>
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<tr>
<td><strong>Wellbeing and spirituality organizations:</strong></td>
<td>Promoting wellbeing</td>
<td>-Learning Program</td>
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<tr>
<td>- Art of Living Yoga Latvia</td>
<td>-Embracing spirituality</td>
<td>-CSA</td>
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<td>- Slow food movement</td>
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<td>- Damanhur</td>
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<tr>
<td><strong>Like-minded people of the near village (Krote) and city (Priekule)</strong></td>
<td>Support the transformation of the society into a sustainable human presence on Earth.</td>
<td>-CSA</td>
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<td></td>
<td></td>
<td>-Celebration events</td>
</tr>
<tr>
<td><strong>Local sustainable communities:</strong></td>
<td>Create alternative models of regenerative cultures.</td>
<td>-Learning Programs</td>
</tr>
<tr>
<td>- Smiltenei un Latvijai</td>
<td>-Celebration events</td>
<td>-Celebration events</td>
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<tr>
<td>- IkšķilesPārmaiņulniciatīva</td>
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<td>-Sharing information and resources</td>
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<tr>
<td><strong>Nature lovers (hikers, ornithologists, artists, photographers)</strong></td>
<td>Enjoy Nature</td>
<td>-Learning Programs</td>
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<td></td>
<td>-CSA</td>
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<td></td>
<td></td>
<td>-Reforesting activities</td>
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<td></td>
<td></td>
<td>-Celebration events</td>
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<tr>
<td><strong>Local and national administration:</strong></td>
<td>Protect the environment and manage it sustainably</td>
<td>-Learning Programs</td>
</tr>
<tr>
<td>Organization</td>
<td>Activities</td>
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<tr>
<td>----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| Ministry of Environmental Protection and Regional Development of the Republic of Latvia | - Reforesting activities  
- Promote the traditional techniques of farming.  
- Being valued and recognized.  
- Keep the land and produce quality food   |
| The Rural Support Service LatvijasValstsmeži  
Latvian Agricultural Advisory and Training Centre | - CSA  
- Workshops on farming techniques  
- Toolbox sharing  
- Products sharing  
- Celebration events |
| Local traditional farmers | - Creating direct bonds between consumers and producers.  
- Support local farmers  
- Eat healthy food |
| Regional CSAs | - CSA  
- Learning Program  
- Celebration events |
| Experts in:  
- Eco-building  
- Environmental education  
- Agroecology  
- Forest management  
- Renewable energy  
- Health (yoga, meditation, nutrition) | - Work on their field of expertise.  
- Create alternative models for their working area. |
| Local conventional farmers | Produce as much food as possible, at the lowest price with the lowest effort.  
- Toolbox sharing  
- Workshops on farming techniques  
- Celebration events |
| Conservative people | Maintain their ideas and beliefs. | -Learning Programs  
- CSA  
- Reforesting activities  
- Celebration events |
|---------------------|----------------------------------|----------------------------------|
| Biomass and wood companies | Obtain as much benefit as possible from the land as quick as possible | -Workshops on forest management  
- FSCs wood selling |
| Hunters | -Assure their right to hunt.  
- Control over Nature. | -Workshops on forest management  
- CSA  
- Celebration events |
| Supermarkets and Local shops | Sell as much as possible with the maximum benefits. | -Distribution point for the CSA  
- Selling food |

Table 1. Potential participants in DievaDaba’s network.
Figure 4. Network features of Dieva Daba community.
Figure 5. Network map of DievaDaba community.
Economic Dimension
Global and local impact of the economy on the project

Initial considerations

Among the objectives of this project is to inspire others in the bioregion to produce and consume local goods, protect and increase the biodiversity of the land and offer learning experiences which help in the transition to more sustainable and resilient lifestyles.

The first issue which has an impact on this project is a matter of how people in the local community may perceive it: Why do it? Who for? A great majority of people carry the story that economics is an unquestionable science, a system that cannot be changed. Why is it necessary to reevaluate the current economic model? There is an assumption that there is no harm and no alternative to an economy which is driven by competition on a global scale and the belief that perpetual growth is possible on a finite planet. Our current economic system is designed in such a way that natural resources can be used to maximize individual profit while upsetting the balance of ecosystems and the capacity of the planet to regenerate itself. As long as people have access to cheap imported goods, whose price rely on externalization of some costs together with perverse subsidies for big industrial systems, the question of why it might be preferable to choose local goods with a low ecological footprint may seem irrelevant to people in neighboring villages. When people are experiencing a disconnection between humans and nature, the loss of biodiversity may go unnoticed, its long term impact on the economy unimagined. All of the above has an impact on how neighbors, local authorities, investors and funding agents perceive the project.

Another issue that will need to be taken into account in the project is how to integrate the global carbon budget. One of the goals of the community is increasing the biodiversity, which will involve planting a significant number of trees. Both carbon sequestration together with the enhancement of the ecosystem services provided by
the project could be introduced to the national and local authorities in order to ask for their support of the project.

One other important issue to take into consideration is how the Common Agricultural Policy (CAP) is affecting small farmers, young farmers in Latvia and how they grow their crops. Small farmers are subsidized in Latvia with EU funds since 2004, they depend on these subsidies however their product compete with cheaper ones that come from more heavily subsidized large scale farms in other countries such as Netherlands, Poland, Spain. It will be necessary to research the market and seek out the implications national and EU funds.

When we approach funding bodies and investors we will highlight the alignment of our project with the 17 Sustainable Development Goals adopted by the member states of the United Nations as of 2015. Particularly our focus will be on these goals: #3 Good health and wellbeing, #4 education, #7 affordable and clean energy, #11 sustainable communities, #12 responsible consumption, #13 climate action, #15 life on land and #17 partnerships for the goals.

**Products and services sourced from overseas**

There are some of the products and services which will be sourced from overseas in the areas of food, energy, transport, clothing, furniture and funds. These will need to be considered for their ecological footprint and the impact that our economy will have in other places. Below we identify some of them:

**Food products:** The priority will always be to choose local, regional and organic products. Although it is possible to have a healthy diet with local foods only, there are some items which may want to be imported from such as salt, olive oil or other foods which have valuable nutritional properties such as bananas or avocados. These kinds of products should be bought from fair trade companies or cooperatives and their food miles from the country of production should be minimized. The carbon
footprint coming from the import of products could be compensated by planting trees on the plot of the project.

Energy: As described in the ecological dimension chapter, all the necessary energy can be generated on the site: firewood, biomass for heating and cooking, solar water heating panels in the brighter months and wind turbines for electricity. More details of how this will be managed and distributed are in the Ecological Dimension Chapter. We are aware that wind turbine parts may be manufactured abroad resulting in a higher carbon footprint and higher prices. We will research open source designs made up of parts easily found in any hardware store which will reduce the amount of emissions and make it more affordable. In a later stage of the project we may consider investing in a more robust design. The ecological footprint of these technologies will always be assessed and compared with importing the electricity from outside in order to evaluate its suitability.

Transport: The nearest village to the site is 4 km away. In dry weather it will be possible to cycle to and from the site; however it will be necessary to use a car during the winter months. Car sharing will be an important feature of the Dieva Daba community in resonance with our goal to share resources, live more simply and reduce our ecological footprint. One of the goals of the project is to diversify economic activities in order to reduce the need to find jobs beyond the site and therefore minimize commuting. Trips to the village or nearby city will be minimized by solving all the community members' needs and interests in a weekly day trip. Participants of the courses, volunteers and apprentices that come from abroad will likely use fuel sourced transport including cars and airplanes. Information will be provided for how to make a contribution to on-setting projects.

Clothing and furniture: these are generally imported and more affordable than those made in the bioregion due to externalities and subsidies. Furniture can be partly self-made in a sustainable way as the bioregion provides much wood for construction of
houses and furniture.

*Funds:* some financial support may come from abroad such as individual investors and international organizations (i.e. WWF), European Union Funds as well as the local government and Ministry of Agriculture and Ministry of Environmental Protection and Regional Development of Latvia.

Dieva Daba’s SWOT analysis
In this SWOT analysis, we identify the strengths, weaknesses, opportunities and threats of our project. In this process, we have identified strengths, which are both internal and favorable factors, and threats, which are mainly external and unfavorable factors. See chart below:

**S**
The biodiversity and beauty of the land, soil fertility make it possible to produce food locally throughout the year, a water reserve, affordable land can attract new community members, knowledge, skills and experience in the areas of environmental studies, sustainable design and spiritual practices.

**W**
The need to raise initial funds and be economically independent so that our project isn’t compromised.

**O**
The opportunity to lead the first eco-community in the region and build a farmers’ network. A growing awareness around deforestation and loss of biodiversity in Latvia. A new EU law for wastewater treatment which has an impact on Latvian households.

**T**
People in neighboring areas have fear of the unknown, it will take time to build trust and relationships. The amount of cheap subsidized imported goods on offer which compete with local, organic and not subsidized goods in this low income area.

Economic Resilience
Actions towards a more just, resilient and sustainable economy

By reviewing our SWOT analysis we have been able to identify actions which will help us build a more just, resilient and sustainable economy.

As we have seen in the SWOT analysis one of the strengths of our project is that the initial 9 hectares of land can be purchased for the small price of approx. 20000 euros. Additional neighboring land can be bought for further development of the eco community Dieva Daba. One first action will be to create a Community Land Trust through which we can provide affordable housing in this low-income region. Having community owned land will also contribute to our vision of building an economy rooted in trust, collaboration and generosity. Sharing common land, pursuing economic activities together and distributing the income amongst the community members will contribute to the social fabric of the community. It will provide opportunities to reassert our values together, for sharing knowledge, skills, and responsibilities and for celebrating together the rewards of our economic activities.

Another strength we identified is the rich biodiversity and soil fertility of the land. This will provide economic opportunities which will help generate multiple forms of capital through our social enterprises: the CSA Cooperative, the Commons Forest Trust and our Learning Program. We will share the income generated by creating a Community Fund. More information is provided about these social enterprises and the Community Fund in sections 4 and 5.

The SWOT analysis has also brought to our awareness a weakness in regards to the initial funds we need to raise to kick start our economic activities. We will take actions to find an appropriate alignment between our vision, mission and objectives with the vision of funding bodies or external investors (see Social Dimension chapter, Dieva Daba community network section). For example, we have found EU funds destined for the development of organic farming in Latvia, however we ought to be careful about
the hidden subsidies that have negative effects elsewhere and more research will need to be carried out in this area. Another way in which we will raise initial funds will be with a crowd funding campaign a crowd funding campaign could be launched in order to have economic resources to build the visitors’ huts and the reward could be a weekend stay.

As for opportunities, we might be able to generate significant interest in our project if we take on the challenge and opportunity to be the first intentional community in the region and aim to build the first farmers’ network. This will be a pitching point when we approach the local and regional governments, launch our crowd funding campaign or meet potential investors for the first time.

Another opportunity which we have identified is the result of a new EU law which has an impact on Latvian households; there is now an identified need to improve wastewater treatment. This proves to be another opportunity for generating an income as one of the members currently has the skills to be able to offer wastewater treatment services in the region. In section 5 there are more details on all our economic activities and financial issues are discussed to greater extent.

Earlier we mentioned that one of our strengths is the rich biodiversity on the plot of land and our aim is to carry out a reforestation project which eventually becomes part of the Commons Forest Trust. With this in mind, we will seek funds through WWF Latvia and the Ministry of Environmental Protection and Regional Development of Latvia.

Finally, it’s important to address that there might be some resistance to the project in the area and this is the first threat we recognize. To overcome the cultural challenge of different worldviews and the little awareness of the systemic problems in mainstream economics, it will need time to build trust and relationships. The community will try to include in its network not only potential supporters of their projects, but also those who could oppose to them, in order to gain their trust and influence them (see Social
Dimension chapter, Dieva Daba community network section). It will be important that the housing and what we offer through the community is financially accessible to people living in the neighboring areas. We will organize family friendly events, welcome visitors and offer tours of the site (see Social Dimension chapter, Group Membership Protocol), we will show how our food is grown and talk about the benefits of eating locally organic produced food.

Time Banking is also a great social and economical tool. Older generations of Latvians might not be familiar with this particular term but indeed practice it already: neighbors babysitting for each other, farmers sharing tools and equipment among themselves or an electrician exchanging his time for a knitted woolen sweater. This practice of generosity, redistributing wealth and giving back to the community, strengthens the social bondage and generates other forms of capital. In the context of our community, farming and building labors could be shared with people of the surrounding villages. The area of collaborative consumption would be something to be explored as the community settles and relationships and connections grow.

Another way to build long lasting relationships with people in the neighboring areas is by meeting our objective to offer long term employment for jobs such as cleaning, cooking and general maintenance of the site. This will make connections between people who live on the community grounds and those who live in the neighboring areas.

Building a farmers' network will also be an action we want to take to build trusting and long-lasting relationships in region. It will help to cultivate a culture of sharing knowledge, experience and skills and cultivate a spirit of collaboration between people who share similar values and vision of sustainable living. The network will give more visibility to this changing culture and worldview and helps to generate trust beyond the network.

In our goal to localize the economy and build an economy based on collaboration we
have found that Ethan Miller’s “Map of the Solidarity Economy” is helpful for identifying the many in which we will do this:

![Diagram of the Solidarity Economy](image)

Figure 6. Dieva Daba’s Map of the Solidarity Economy

**Right Livelihood**

**Wellbeing indicators**

Our economy will be the way in which we can put into practice our values, build relationships based on these values and it will also be the means to generate multiple forms of wealth. Therefore, we have identified a number of well-being indicators which we will use to evaluate the health of the Dieva Daba community.

Our success will not be measured with our financial and material assets.
members will probably be drawn to Dieva Daba in the first place because they share a philosophy of voluntary simplicity and will want to develop intellectual, experiential, living and spiritual forms of wealth.

These well-being indicators therefore cover ecological and social aspects. Although there are some indicators, which can be more easily measured quantitatively (points 1-5 there are others, which are more subjective (points 6-10). In the latter case, we may evaluate these in terms of their absence. We are aware that expressing appreciation towards others and inspiration by the vision may take different forms and it is not necessarily tangible or visible, but felt in a very personal way but indeed it is either present or absent.

1. The health of soil and total species biodiversity.
2. The decreasing amount of waste generated.
3. The increasing circular use of goods, services and energy production on a local/regional scale (reducing a dependency on a market driven economy, fossil fuels and carbon).
4. The diversification of economic activities.
5. More relationships and connections locally, regionally and globally, creating a larger and more diverse support network and generating new feedback loops (new members, visitors, students, followers, supporters from the public, private and NGO sectors).
6. The quality of the relationships and interactions with all our stakeholders, creating a tight feedback loops.
7. A sense of belonging and a renewed connection to the vision.
8. The ability of community members to respond and adapt to unpredictable internal and external situations, appropriately and positively. The ability to resolve conflicts.
9. Continuous learning and sense of fulfillment (ongoing personal development, contributing to healthy relationships, learning new skills and stepping out of
our own comfort zones, etc).

10. Experiencing the narrative of inter-being. More trusting relationships with those who don't share the same worldview (for example, neighbors in the nearby village and town).

Actions within Dieva Daba

In order to become richer in the ways described above we will make decisions, which benefit the wellbeing and health of the whole system (people within and beyond the community, other beings and nature).

We are aware that an essential aspect of the health of our community will be to maintain personal development and spiritual practices. These will help us articulate and reassert our values, hold integrity with our words and actions, stick to our commitments, practice acceptance and compassion for ourselves and each other.

Another way in which we can become richer in the ways we have described is by building an economy, which is based on cooperation. We will mention a few of the many ways in which we can cooperate as investors and consumers. For example, within the community, we will share responsibilities and leadership, jobs and resources and we will set up a Common Fund which responds to communal needs and interests. Beyond the community, we will share what we learn with others in the global community contributing to the knowledge commons and where possible share open-source designs.

In the following section we will be able to discuss further how our social enterprises will help us build an economy based on cooperation rather than competition.

Social enterprises

Social enterprise opportunities

We have identified three social enterprise opportunities, which we can carry out
through our community: a Community Supported Agriculture Co-operative, an Education Centre and a Commons Forest Trust.

The CSA Cooperative will focus on organic food production. The Education Centre will hold courses and practical skills workshops based on the four dimensions of the GEDS and it will support research. We will also aim to develop a reference library which non-community members can access for free. The Commons Forest Trust responds to the site’s rich biodiversity and the possibility of carrying out a reforestation project. It will also provide a platform for an increasing number of people who are becoming aware and concerned for the loss of biodiversity and the scale at which trees are being cut down in Latvia. We will aim to create a Commons Trust of the forest so that people beyond Dieva Daba community can participate and collaborate in the management of the forest, celebrating the local biodiversity.

The goals of the social enterprise

In this report we will focus on the first social enterprise which we want to set up: the CSA cooperative. The CSA Cooperative will be the way in which we can put our vision into practice and build an economy which is more cooperative, resilient and regenerative and the way in which we can generate multiple forms of capital as described through the following goals:

Ecological goals

- To produce organic food following permaculture principles in three hectares of community-owned land.
- To maintain diverse perennial vegetation, mimicking the natural biodiversity seen in ecosystems.
- To never extract more value than what can be regenerated within the capacity of the living system.
- To grow vegetables and fruits which correspond to the climate of the bioregion between March and October.
❖ To store vegetables in the winter season.
❖ To build up and regenerate soil by controlling erosion, using minimum plowing techniques.
❖ To never use any chemical fertilizers, herbicides and pesticides and instead use crop's rotation and association and develop and apply our own biofertilizers and biochar.
❖ To develop a seed bank of local organic varieties and exchange them with other farmers in the region taking into consideration EU and national legalities.
❖ To raise a small number of laying hens and cows for dairy products for members within the intentional community and add diversity to the closing material cycle approaches within the farm.
❖ To reduce the carbon footprint with an efficient delivery scheme of our produce.

Social goals
❖ To develop a ten year plan to incorporate 200 members (within and beyond the intentional community).
❖ To build long-lasting relationships rooted in trust in which direct contact between producers and consumers is possible (by cutting out the “middle
person” in food distribution and by organizing visits to the farm to get to know how things are grown).

❖ To make the CSA attractive to new members that want access to year-round diverse produce (specific foods mentioned previously).

❖ To set up a shop on-site and a weekly delivery scheme to customers in the area. The weekly delivery scheme will offer enough food for two adults a week or one family that doesn't cook all the time. The availability of products in the shop will be made known in an e-mail out to the customer so that they can choose which products they want and the amount of them, with a minimum cash order price.

❖ To work cooperatively with other organic farms and producers in the region to help offer a more diverse range of produce, strengthen community ties, share tools and equipment (collaborative consumption) and participate together in farmers' markets. Also to make contacts with local farmers from older generations who can share their wisdom about local climate conditions and local seed varieties.

❖ To create a Participatory Guarantee System (PGS) in the region involving organic farms and producers and CSAs cooperatives, as an alternative and complementary tool to third-party certification within the organic sector.

❖ To involve members in a biannual assembly, communicating new initiatives, challenges, risks and rewards (i.e. weather conditions that result in smaller harvests).

❖ To keep members up to date with upcoming events, recipe ideas, harvesting times with a monthly newsletter or through social media (i.e. facebook). Also establishing a fluid communication with the members through an instant message app (i.e. whatsapp) to announce unexpected issues, changes of plans, problems in the harvests. The aim of these communication channels will be to keep constant communication with the members and have bidirectional
feedback, so that customers can understand the challenges that farmers have to face and the benefits of their work.

❖ To continuously find opportunities to practice generosity and share gifts by offering free and open events where we share food, skills and knowledge.

❖ To offer tours of the farm both to members and for those who are interested in joining the CSA or have an interest in organic farming and permaculture.

❖ To organize seasonal events and invite members and others beyond the intentional community to celebrate the gifts that come at harvesting times (see Social Dimension chapter, section Dieva Daba community celebrations).

❖ To share our knowledge of organic farming in one-off practical skills workshops, apprenticeship and volunteer programs.

❖ To develop a four-person eight-month apprenticeship program and welcome volunteers to help with the production of food and share our knowledge. Apprentices and volunteers will help farmers with the weeding, digging, carrying crates, picking and packing produce for the CSA members. Volunteers will be able to get in touch at any time of the year and come for any period of time, according to the needs of the farm.

❖ To inspire a young generation through our work.

Economic goals

❖ To localize the supply chain ensuring tighter feedback loops.

❖ To make our products accessible by implementing sliding scale pricing.

❖ To be able to generate new jobs for people in the neighboring villages who don’t have access to their own land and have an interest in organic farming.

❖ As a long term goal, once the farm is more productive, to offer a workshare membership where members, who have experience in growing organically food, commit to a regular work hours in exchange for a share of the farm’s produce and an hourly rate.
To become financially independent in the course of three years, steering away from a dependency on subsidies which have hidden externalities.

To be able to raise enough financial capital to invest further in developing and acquiring new skills and cover the costs of contingencies.

To find a way of building in a complementary currency system for the members of the CSA.

The main challenges

First of all, there will need to be 4-5 families who share Dieva Daba’s vision, settled in the long term residential properties and are committed to the CSA project. This means that these families will somehow bring in some relevant skills, experience inorganic farming and will be willing to contribute a number of hours a week to help coordinate and organize the project until it matures into a financially viable project that can generate jobs for others. The land will be managed by local farmers from the neighboring villages that want to get involved in the project, bringing their expertise in the field as well as apprentices and international volunteers.

One of the advantages of a CSA project is that year round members’ subscription gives farmers a reliable source of income to pay for costs up front. Finding the first members to raise funds for tools, equipment, seed adaption to local climate, seeds, natural nutrients for the soil, will be another challenge, although only at the initial stage of project. To kick start the project we can launch a crowd funding campaign and issue and sell vouchers with an expiry date which can be exchanged for produce within the following year. This could be a first step for developing a relationship with prospective members.

Another challenge will be to offer varied produce to attract new members and retain existing members. One way to overcome this challenge is to work cooperatively with other farms that share the same ethos and produce food that the Dieva Daba
community doesn’t. Some of these organic farms are: Mauriņi (sheep wool products), Sidrabi (hemp products, nuts, butter), Ragāres (tea, spices, instant soup mixes, herbs), Geidas (dairy products with cow milk), Kurmīši (herbal teas, medicinal plants, and essential oils), Sili (goat’s milk, cheese, and dairy products), Lielkani (seasonal fruits, berries, jams, jellies, syrups, teas).

Further connections will be made through the Permakultura network, the Association of Latvian Organic Agriculture, farmers’ markets and independent shops which sell organic produce in Priekule, and Liepaja. These are mapped out below.

Although we have mentioned some of farms and organizations which support organic farming, it is important to point out that in Latvia many farmers are organic but not certified. Since Latvia’s incorporation to the EU in 2004, farmers have begun to go through the EU organic certification process to access EU funds. The demand for organic products in Latvia is currently very small so one of the biggest challenges we will face will be to show why organic is preferable and beneficial for health. This topic will be included in the environmental Learning Program developed by the Dieva Daba community.

Who our stakeholders are

As we have described earlier, in the section on well-being indicators, we will value the quality of relationships and interactions with all stakeholders and aim to build long-lasting relationships rooted in trust. We will celebrate this self-reliance in resonance with the narrative of inter-dependency described in the Worldview Dimension Chapter. This will be a key indicator of the health of Dieva Daba as well as the way in which we can build a more resilient economy.

The following table maps out our stakeholders and the ways in which we can come together:
<table>
<thead>
<tr>
<th>FUNDS</th>
<th>PRACTICAL ADVICE/SUPPORT/POLICY</th>
<th>RESEARCH/EDUCATION/TRAINING</th>
</tr>
</thead>
<tbody>
<tr>
<td>WWF Latvia</td>
<td>Local government</td>
<td>Latvijas Permakultūras Asociācija</td>
</tr>
<tr>
<td>EU structural funds / rural development Latvian Ministry of Agriculture</td>
<td>ALOA</td>
<td>Latvian Agricultural Advisory and Training Centre Gaia Education</td>
</tr>
<tr>
<td>Regional Development and Environmental Protection funds in Latvia Local government</td>
<td>IFOAM EU</td>
<td>Ecovillage Road EU</td>
</tr>
<tr>
<td>Baltic Sea regional funds</td>
<td>Latvian State Institute of Agrarian Economics</td>
<td>Global Ecovillage Network</td>
</tr>
<tr>
<td>Private funds</td>
<td>ZALĀS ZINAS</td>
<td></td>
</tr>
<tr>
<td>Personal investors</td>
<td>Local / regional farmers</td>
<td></td>
</tr>
<tr>
<td>Crowd funding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHANNELS</th>
<th>CUSTOMERS</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latvijas Permakultūras Asociācija</td>
<td>CSA members</td>
<td>Iļķšīles Pārmaņu Iniciatīva (Transition Initiative)</td>
</tr>
<tr>
<td>Permaculture Network</td>
<td>Priekule Market</td>
<td>Smitlenu un Latvijai centre</td>
</tr>
<tr>
<td>Latvian Intentional community network</td>
<td>Liepaja Market</td>
<td>Gaismas Dārzi centre; Organic farms in Latvia: Mauriņi, Sidrabi, Ragāres, Sili, Geidas, Kurmiņi</td>
</tr>
<tr>
<td>Local/Regional media</td>
<td>Neighbors in Krote and Priekule</td>
<td>Tiešā pirkšana</td>
</tr>
<tr>
<td>Farmers' markets</td>
<td>Local independent shops which sell organic</td>
<td>Greenpeace</td>
</tr>
<tr>
<td>GEN</td>
<td></td>
<td>Latvian Ornithological Society</td>
</tr>
<tr>
<td>Ecovillage Road EU</td>
<td></td>
<td>Art of Living Yoga Latvia</td>
</tr>
</tbody>
</table>

Table 2: Dieva Daba's stakeholders
The added value of our products

In the previous sections we listed the goals of the CSA, identified challenges and mapped out our stakeholders. Now we will discuss what our products will be and the added value of these.

One of the goals we mentioned was to grow vegetables and fruits which correspond to the climate of the bioregion. In the initial stages of the project we will be working with 3 hectares of land, however this could increase as our capacity grows. These are some of the many crops we can grow and we will have to carry out an assessment study to identify which will be more suitable to start with: carrots, onions, kohlrabi, rutabaga, black winter radish, cabbage, turnip, beetroot, potatoes, pumpkins, cucumber, squash, even tomatoes, paprika, basil in greenhouse; also seasonal types of cereals such as oats, rye, barley, wheat, also buckwheat, hazel nuts and seasonal fruits like apples, plums, cherries, pears, corns, mulberry, grapes, raspberries, strawberries, and elderberry. Honey shall be produced in a sustainable way, where maximum 50% of honey is annually used by humans, while rest serves as food for bees in the winter months. Although the growing and harvesting period is between March and October, some of the produce will be kept during the winter months and sold throughout the year.

Our products will be attractive to people who share our vision of striving for small-scale local production processes and localizing supply change with low impact production processes. The customers will also value having a direct contact with the producer and consuming high quality products which contribute to their own wellbeing and the planets'.

There are many added values to our product. First of all, it will be possible to come to the farm and see where the produce comes from and buy directly from the producer - therefore having access to information that is otherwise lost in mainstream food distribution channels that have long distance supply chains. The products themselves
will be better for the consumer's health and the local environment by cutting out carbon emissions which come from transport and the manufacturing chemical fertilizers and pesticides. There will also be a cultural connection to local seed varieties, which will be preserved and adapted to the new conditions of climate change by growing them Doro Schreier (2014)

Our customers

We will reach out to new customers by issuing and selling vouchers with an expiry date which can be exchanged for produce within the following two years. This could be a first step for developing a relationship with prospective members. Once those customers want to consume our products frequently and support our project they can decide to become members of the CSA Cooperative. This will be done by paying a membership and annual subscription fee. This will be a minimum expense which the member commits to, making it affordable for anyone who is interested in buying a certain amount of food over a period of at least a year. When a member receives food, the price is discounted from its subscription. When that person has spent all the budget of the subscription he will have to pay for the extra orders. Our customers-members will be able to vote for some of the decisions of the CSA Cooperative in a bi-annual assembly.

Where will we find our customers? Through independent local shops that sell organic produce in Krote and Priekule and farmers’ markets such as Priekule Market and Liepaja Market. As our farming capacity grows, we will want to contact the managers of schools, hospitals and public administration organizations in the region to offer our products for their canteen services.

It will be possible to buy our produce directly at Dieva Daba. We will have visibility on existing platforms and networks such as Permakultura network, Latvian Intentional community network, Global Ecovillage Network and Ecovillage Road EU. We will link the website of the project to other related sites and those of the networks where the
Dieva Daba is participating and we will apply Search Engine Optimization (SEO) techniques to improve our visibility in web search engines. We will advertise on local and regional media and also contact consumers through social media and e-mailings.

Business Planning

Triple-layer Business Model Canvas

In previous sections, the social enterprise goals and stakeholders were described. In this triple-layer business model canvas (Joyce, A. 2015) further environmental and social aspects are explored. To complete this business plan, it will be necessary to carry out a feasibility plan to fully identify the demand for this enterprise. The carbon footprint of our activities will need to be assessed too to complete this canvas. All of this will need to be outlined before contacting prospective investors and funding bodies.
Environmental life cycle layer

<table>
<thead>
<tr>
<th>SUPPLIES &amp; OUTSOURCING</th>
<th>PRODUCTION</th>
<th>FUNCTIONAL VALUE</th>
<th>END-OF-LIFE</th>
<th>USE PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Energy and water for farming processes (% carbon footprint tba)</td>
<td>-Crop farming (% carbon footprint tba)</td>
<td>-A weekly box of fresh vegetables (feeds two adults or family of four that some but not all meals at home) x total number of consumers</td>
<td>-Crates, boxes and paper bags (% recycled/reused tba)</td>
<td>-Energy used for cooking in individual households (% carbon footprint tba)</td>
</tr>
</tbody>
</table>

MATERIALS
-Plastic crates, cardboard/wooden delivery boxes and paper bags (% carbon footprint tba)

DISTRIBUTION
-Hybrid delivery truck (% carbon footprint tba)

ENVIRONMENTAL IMPACTS
-Highest % will be likely be from distribution (tba)

ENVIRONMENTAL BENEFITS
-Organic farming, increased soil fertility, increased biodiversity, localized supply chain, low impact production processes.

Table 3.1. Dieva Daba’s Triple-layer business model canvas
### Economic layer

#### PARTNERS
- Liepaja and Priekule Markets
- Association of Latvian Organic Agriculture (ALOA)
- Local/regional ecosystems

#### ACTIVITIES
- Organic food production
- Apprenticeship and volunteer program

#### VALUE PROPOSITION
- Direct contact between farmers and customers.
- High quality food which increases the health of people and planet.

#### RESOURCES
- Intentional community members
- Local and regional farmers
- 9 hectares of land
- Cooperative shares
- Common fund

#### CUSTOMER RELATIONSHIP
- Membership

#### CUSTOMER SEGMENTS
- People committed to the sustainable development goals

#### COSTS
- Seeds and soil nutrients
- New tools/equipment or replacement
- Contingencies/loss of harvest

#### CHANNELS
- On-site shop
- Box delivery scheme
- Internet (social media, e-mailings, networks)
- Tours of site
- Bi-annual assembly
- Events

#### RESOURCES
- Intentional community members
- Local and regional farmers
- 9 hectares of land
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#### CUSTOMER RELATIONSHIP
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#### COSTS
- Seeds and soil nutrients
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- Contingencies/loss of harvest

#### CHANNELS
- On-site shop
- Box delivery scheme
- Internet (social media, e-mailings, networks)
- Tours of site
- Bi-annual assembly
- Events

#### CONTENTS
- Membership subscription fee
- Vouchers
- Direct selling

---

Table 3.2. Dieva Daba’s Triple-layer business model canvas
### Social stakeholder layer:

<table>
<thead>
<tr>
<th>LOCAL COMMUNITIES</th>
<th>GOVERNANCE</th>
<th>SOCIAL VALUE</th>
<th>SOCIETAL CULTURE</th>
<th>SCALE OF OUTREACH</th>
<th>END-USER</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Organic farmers' network with local and regional farmers</td>
<td>-CSA Cooperative.</td>
<td>-Localizing supply chain, plugging the leaks of the local economy.</td>
<td>-Culture of collaboration and participation.</td>
<td>-Local/Regional</td>
<td>-Taste</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Direct contact with farmers.</td>
<td>-Culture of caring for planet and people.</td>
<td>-International volunteers/network</td>
<td>-Color</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-Variety</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EMPLOYEES</th>
<th>SOCIAL IMPACT</th>
<th>SOCIAL BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Cooperative shares</td>
<td>-Change in shopping and cooking habits</td>
<td>-High nutritional value</td>
</tr>
<tr>
<td>-Work share program</td>
<td></td>
<td>-Personal and professional growth along supply chain</td>
</tr>
<tr>
<td>-Farmers' network</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Healthy and safe working conditions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.3. Dieva Daba’s Triple-layer business model canvas.
Diversification of economic activities

As mentioned in previous sections, in the long-term it’ll be important to diversify economic activities to make the community a more vibrant place and less reliant on external jobs which contribute to carbon emissions when commuting.

We have talked extensively about the CSA Cooperative and mentioned other social enterprise opportunities such as the Education Centre and the Commons Forest Trust. However, there is another way in which economic activities will be carried out, especially in the initial stages of the project when community members need to cover their living costs. Until the social enterprises are established it is likely that community members will have to work outside the community. The possibility exists of offering services in the region such as permaculture consultation, gardening, construction and selling of rocket ovens and wastewater treatments.

It may also be the case that some members of Dieva Daba decide to retain their external jobs even if they have the possibility of working within the community. This might be for varying reasons: they might have particular skills which can only be applied outside the community, it might be that they to invest in improving their households, or pay for their children’s education, save for future security, or for travelling and hobbies.

To make sure that these external jobs revert to the community it will be essential to have the buy-in fee (this will be the construction of the house), the ongoing membership fee which will be invested in the Community Fund and a commitment to a minimum amount of hours for shared jobs and responsibilities on the community grounds. The diversification of our economic activities will make it possible to build a thriving and resilient community.

Overview of financial issues

As mentioned at the beginning of this chapter, when we approach funding bodies and
investors we will highlight the alignment of our project with the 17 Sustainable Development Goals adopted by the member states of the United Nations as of 2015. Particularly in relation to these goals: #3 Good health and wellbeing, #4 Education, #7 affordable and clean energy, #11 sustainable communities, #12 responsible consumption, #13 climate action, #15 life on land and #17 partnerships for the goals.

We will need to ask for specialist advice to create a feasibility study and business plan. It is our hope to become financially independent within the first three years, especially once the CSA Cooperative is established.

There are several ways in which we will seek the initial funds to start building the Dieva Daba community. A crowd funding campaign aimed at the general public could be launched in order to have economic resources to build the visitors' huts and the reward could be a weekend stay. A different crowd funding campaign aimed at family, friends and personal contacts could be launched for a “getting-started-package” which will include a range of areas such as paying for the specialist advice, obtaining the initial planning permission, building the small pond for watering and any necessary tools and equipment.

We will also apply for grants and subsidies through Latvia Ministry of Agriculture, EU rural development funds and NGOs that can go towards any measures that help us in these ways, aligned with our goals and values:

- improve the quality of water and soil
- the ability to respond to natural cycles
- protect the environment and animal and plant health
- increase biodiversity
- the natural resistance to pests

To launch our first social enterprise, the CSA cooperative, we will reach out to farmers
in the local area and region by selling shares of the cooperative (one member - one vote) and to customers by selling vouchers with an expiry date. More information about the membership options are in the legalities section.

Overview of legalities

The legal entities will include a Community Land Trust, a Cooperative and a Community Fund.

The Community Land Trust

This will be a non-profit entity which owns the land and leases a hectare to individuals, families and groups. Housing will not be provided so members will have to pay upfront the costs of building a house (open-source design plans for appropriate eco-housing will be provided as well as other practical and legal advice). The building of a house will be what we call the buy-in fee. Although the land will be leased from the Community Land Trust, the houses will be privately owned by each individual, family or group. If a member decides to leave, they can sell their houses to another or new member of the community, however not the land. This takes away the ability to speculate with market prices but still provides a ownership model for members that honors their investments. It is our vision that the houses will be passed onto future generations, increasing a sense of belonging to the land. After certain years of truthful devoting to Dieva Daba, it might be considered to sell the 1ha family plot to the Family, as a gesture of trust. Thus, legal formalities will have to be considered. One advantage of Dieva Daba community is that the leasing and construction of housing is affordable as well as the ongoing membership fee, which will include a share of the CSA cooperative and a share of the Community Land Trust. This will be a way of attracting new members.

There will also be modest housing provided for temporary residents (the visitors' huts). These will generally be destined to the people that participate in the Learning Program offered by the community center or the apprenticeship program in organic
food production. For those who wish to stay temporarily at Dieva Daba, there's a possibility of renting these visitors’ huts for a modest price through the Community Land Trust. They may also be used by prospective members who are in the process of deciding if they want to join the community.

This combination of long term residents/property owners with a high turnover of temporary residents/rentals will bring diversity to the community. The rental option will make the intentional community accessible to people who aren't ready to pay up front for the cost of building a house. Having property owners will be an asset to the community, because we can assume that they will be long-term members, committed to Dieva Daba’s vision and they are more likely to invest time and energy in the maintenance and improvement of their properties.

There will be a possibility of increasing land size with a growing community, as land resources in close area are available.

A feasibility study will need to be conducted to determine the costs of leasing land, the buy-in fee (for the construction of a house) and the rental properties (visitor's huts). Each new household will go through the membership approval process as described in the Social Dimension Chapter. The house designs will allow flexibility to ensure that new members can pursue their sustainable living dream while at the same time be coherent with the design of the entire plot and overall goals of Dieva Daba.

*The Cooperative*

There will be various ways to become a member of the CSA Cooperative. Each member will have one share of the Cooperative.

First of all, Dieva Daba members who will get a share of the CSA Cooperative as part of their membership fee to the community. These members will commit to a minimum amount of time to the coordination and organization of the Cooperative. Then there are the skilled farmers who participate in the project but do not necessarily live on site. Both Dieva Daba members and the skilled farmers will form the governing
The council of the Cooperative who will be involved in the day-to-day decisions.

The other members of the Cooperative will be the people who consume our products and decide to support our project through an annual subscription and membership fee. These customer-members will also be able to take part in some decision at the bi-annual meetings.

Once the CSA cooperative becomes more productive, we will also create a third form of membership which will be the work-share program for members that commit to regular working hours in exchange for a share of the produce and an hourly work rate. This also responds to our goal of creating income opportunities in the area.

The CSA Cooperative will be owned by all members (one member, one vote), pooling resources together, rotating jobs and responsibilities.

*The Common Fund*

Income generated through the community's economic activities will be distributed between the community members, according to the activities they participate in: 60% will be destined for individual and personal spending/savings and 40% for the shared pool of money called the Community Fund.

As mentioned in other sections, some community members might earn an income outside Dieva Daba so it will be important to have an ongoing membership fee, so that all members contribute to the Community Fund. The Community Fund in turn will be allocated towards areas such as community development projects, contingencies, learning/innovation and pension funds/dividends:
Community development projects: money, which is allocated towards the maintenance and improvement of common grounds.

Contingencies: covering costs of an unexpected situation and its solution. This could be anything from a roof leak in the common hall or loss of harvest.

Learning and innovation: allocation towards increasing skills and diversifying productive activities in order to reduce dependency on external goods and services.

Pension funds/dividends: this is money which saved for members’ retirement. It is also an incentive for new members to join and can be cashed in if members decide to leave. The latter is important to make sure individual members don’t make claims over communal goods when they leave. It is important to add too that pension funds as we know them usually involve contracts with banks that support unethical practices. More research will be carried out to find a pension scheme which doesn’t compromise our values.

These allocations will have to be reviewed accordingly by all members and if necessary adjustments can be made in a group meeting where all members attend.
Further considerations which will need to be included in this case study: the particular tax regulations, fiscal rules and licensing permissions which are particular to the local, regional and national context of Latvia.

Ongoing learning

The members of the community will develop their skills through Permaculture training. Specific skills that will need to be developed will be how to build the soil with compost, how to increase biodiversity and control pests through natural predators, how to collect rainwater and treat wastewater, what natural soil treatments can be made, how to manage moisture and drainage through swales, what seasonal vegetables and fruits can be grown successfully, how to rotate crop species so that soil nutrients are properly absorbed by plants, how to take advantage of combining species that grow offering mutual support, what tools and methods are most appropriate.

The Latvian Agricultural Advisory and Training Centre offers a training program in organic agriculture where students learn about legislation, state support policies in organic agriculture and also learning about organic agricultural methods (crop rotation, pest control, soil building, natural fertilizers). It is also an opportunity to network with other organic farmers in Latvia and make direct contact with the Association of Latvian Organic Agriculture.
Ecological Dimension
Climate Change Resilience

This Chapter will be organized in two parts. Part one offers the information about how to adapt and resilience of climate change and part two about tools, which are used to lessen the rate of climate change on a local level.

Resilience

There is an ancient written Latvian proverb – “Latvia in as calm and peaceful as Gods ear” It can be understood geographically – there are no natural catastrophes occurring. There are no droughts, heavy rainfalls, high temperatures, earthquakes, illnesses, tsunamis. Therefore, the adaptation to Climate Change in Latvian territory is even partly positive, as the temperature rises slightly, that might provide richer harvest on a small-scale agriculture. Of course, industrial agriculture with its crops will suffer more from stronger hurricanes, winds and rainfalls. However, small scale adapted permaculture gardening can be planned with enough resilience to these peak climate events.

On a practical gardening level, first organic and local seed material for gardening is to be used. Second – permaculture design is to be used as life hedge around garden for protection of heavy rainfalls and thunderstorms as well as for providing functional biodiversity (in simple words - balance between useful and harmful insects, birds and so on close to the garden).

To ensure constant groundwater level, at least 30% of projected area shall be covered in trees and bushes. This measure ensures higher percentage of moisture in the soil and close area, even air. Therefore, vegetation can benefit as well as groundwater level can be held higher as without tree and bush vegetation.

To capture rainwater for usage in garden and as an aquatic biotope – different pond systems considering existing relief will be used. This provides sustainable water source and saving energy as well as increased local biodiversity.

In case of increasing sun activity in Latvia during climate change, solar panels might
become even more efficient as they are now. Therefore, it might be an alternative energy opportunity.

Increase of wind will have to be carefully looked at, as wind speed over 25 m/s for some wind turbines cannot be used, because of technical risks of storm and wind strength. Still, wind turbine considering current wind speed in that specific area is economically and ecologically attractive.

Tools to lessen climate change

Climate change is caused by many human activities like overpopulation, electrical energy production and consumption, usage of all fossil fuels, transportation, production industry, especially metal and meat production. There are many more reasons but these are to be considered as main causes regarding Life Cycle Assessment methods.

To lessen the climate change, all of these activities should be lessen or an ecologically friendly alternative will have to be found.

On a local level in this project sustainable praxis will be stimulated that includes:

- Car sharing for shopping, work, leisure time
- Vegetarian diet, but not a must, as it saves up to 1000 kg of potential CO2 emissions in a year.
- Forest as a tool for carbon fixation, air purification, oxygen production, regeneration area for humans and habitat for other species, biodiversity
- Dry toilet and separated local grey water treatment (wastewater without toilet water) as it saves up to 75 l of water per day per person and creates a local aquatic habitat and ensures local treatment
- Natural building with local materials
• High rate of self-sustainable agriculture and other tools
• Different vegetation, stone, water habitats for high local biodiversity

Water and Nutrient Cycles/ Ecological Engineering

The following description offers a basic sustainable model of an individual household for five people family in projected ecovillage. The same principles, ideas with re-dimensioning the system might be used for the community and community and seminar house/community and seminar house. The Information is taken from Bachelor Work in Environmental Engineering on Sustainable Housing from Karlis Kalns, 2017.

Water Heating,Circulation

The groundwater level in the projected area is constantly high and allows a constant groundwater withdrawal as drinking water. As most of the individual households in Latvia have no connection to communal drinking water supply, a local, affordable and sustainable solution is needed. Therefore, a well and pump can be installed, with a water pipe 1.2 m underground level to prevent the water from freezing (building.lv, 2005). Most of the territory in Latvia has abundant groundwater resources and this method is common. The water well, during very cold periods might be temporarily
insulated with straw bales or other easily available local materials.

**Water Boiler**

A water boiler is planned, that runs on a mixture of electricity and heat from the wood stove. For sustainability reasons, it is important to use the heat, generated from the firewood stove, as efficiently as possible. Therefore, in case of a permanent heating with wood, the water is heated through firewood-generated heat and no electricity is needed. In addition, a mixture of both is possible. Rocket Mass Heater can be used or a classical firewood stove described as following.

The firewood stove is built from fire-resistant clay bricks with a natural stone and lime foundation underneath it. A surface to cook food is planned with an extra section for baking on one side and a section for a water reservoir, approximately 50l on the other side, closer to the water boiler. Furthermore, the water is heated with the heat of the firewood and as the water boiler is placed above the firewood stove, the warm water flows into the boiler without any need for a water pump. Another pipe at the bottom of water boiler has been planned, that is connected to the water reservoir in the stove, to allow the cooler water to flow black and enable the water flow circulation to happen without a waterpump.

**Problem, Waste Substances**

Water has a natural capacity of cleaning itself and keeping a certain balance. When the natural order of water is disturbed – water is heated, pumped, stored or some chemicals are added, certain waste or problem substances emerge. The less interference in natural water cycles by humans, the better water quality.

**Pathogens**

“Pathogens are generally bacteria, viruses, amoebae or protozoa and parasites, such as worms that invade the body and cause certain illness” (Del Porto & Steinfeld, 1998). All of these pathogenic organisms are adapted for life in a human body, but outside it, they die. Most of the organisms, at 20 degree temperature die in less than 120 days, some,
like helminth eggs (Ascaris lumbricoides), can survive up to a few months (Crites & Tchobanoglous, 1998).

**Micropollutants**

“Micropollutants are contaminants that are persistent and bioactive in very small concentrations. This means that they are not completely biodegradable and cannot be removed with conventional wastewater treatment technologies”. Typical sources of micro pollutants are domestic uses of textiles, electronics, pharmaceuticals, and cosmetic and hygiene products (Primozone, 2017). In this household concept, a minimum use of micropollutant containing products is practiced; furthermore, mostly only organic food and cosmetics are consumed to reduce the pesticide, herbicide and other pollutant quantities.

**Heavy Metals**

The most commonly encountered toxic heavy metals in wastewater:

- Arsenic, Lead, Mercury, Cadmium
- Less common: Chromium, Copper, Nickel, Zinc.

The most common sources of heavy metals are from industrial production than the individual households (Ramboll, 2013).

In this envisaged individual household, the products with the least possible heavy metals are used. When it comes to the wastewater treatment - heavy metals neither disappear nor react – they are either in the water or in the sludge (Ramboll, 2013). Therefore, to avoid a further deposition, avoiding the usage of heavy metal containing products as much as possible is the most sustainable possible individual household’s action.

**Greywater Treatment**

**Legislation**

Regarding the European Union Directive(1991), the demand for domestic wastewater treatment
quality after treatment:

- BOD5: 25 mg/l O2
- COD: 125 mg/l O2
- TSS: 35 mg/l (for filtered samples)
- TSS: 150 mg/l (for unfiltered samples)
- TF: 2 mg/l P
- TN: 15 mg/l N

All these measurements are legislative to agglomerations from 10000 to 100000 human equivalent.

After an interview with Maris Sture (2017), Director of Wastewater Treatment Plant Jelgava in Latvia, it is clear, that the lack of control and legislation on wastewater treatment in individual households in Latvia is a problem. Furthermore, regarding the information from 01.2017, Ministry of Environment Protection and Regional Development of the Republic of Latvia together with Cabinet of Ministers are currently developing a law for decentralized as well as privately owned wastewater treatment plants. Until 01.2017, there has been no control and information on the actual situation regarding wastewater treatment in private/individual households in Latvia. Therefore, for an objective comparison for this project, the criteria for the EU agglomerations has been applied. As explained in the Economic Dimension Chapter, there is an opportunity to offer wastewater treatment consultations.

**Greywater**

Greywater is a combination of wastewater coming from a kitchen sink, dishwasher, washing machine, shower, bathtub, bathroom sink, excluding the wastewater from a toilet. According to the concept of this project, only organic substances – food, hygiene products, liquids like soup, shower gel and homeopathic medicine are used. In case of
an exceptional need for common medicine use, other greywater treatment actions might be considered, because of the possible micropollutant presence.

Normally, greywater contains no pathogens. In spite of this, according to the information from (H. Kadlec & D. Wallace, 2009), some traces of pathogens can be found in greywater, mainly from showering and washing anus and from underwear washing in the washing machine. Therefore, a minimum of pathogen treatment has to be considered.

*Dry Toilet*

![Figure 9. Supply of dry toilets in Latvian market (Tehnoland 2017)](image)

An average consumption of water per person per day in Latvia is 150l and 50% of it is used to flush the toilet. Furthermore, urine and faeces are responsible for approximately 80% of phosphorous and 50% of nitrogen in wastewater. Thus, by using a dry toilet, 50% of the water consumption can be reduced and important nutrients after decomposition and being stored can be used in a garden.

There are several types of dry toilets that can be used in a house, as well as outside. In Figure 9 above there are just some of those found in the Latvian market. As one of the goals is to project an economically affordable house, the product Biolan Separating dry toilet is chosen, as Biolan Naturum is four times more expensive. The chosen model has a built in system, which separates urine from faeces. A ventilation pipe with 12V ventilator is installed and ensures that the unpleasant smell (if existing) leaves the container. Not to lose the heat through ventilation, the usage of ventilator is kept as short as possible.
Biolan Separating dry toilet has two buckets – for faeces 30l separately and for the wooden ash or peat or mixture of those 28l to ensure odorless and effective composting process (Global Dry Toilet Club of Finland, 2014). The urine is being transported through a 32mm pipe to a 50 liter container in the basement. The size of the container is only 50l to limit the weight of the container and to ensure, that one person can frequently empty it.

Figure 10. Biolan Separating dry toilet (Tehnoland 2017)
In one year, approximately 450 kg of urine and 70 kg of faeces per person are generated (Global Dry Toilet Club of Finland, 2014). Per person per week, it would be around 9 kg of urine and 2 kg of faeces. Therefore, calculated for two people and additional sawdust for better composting, it should be enough of emptying the faeces bucket once in three weeks and the urine bucket in the basement should be emptied once in 2.5 weeks. After that the urine is filled in 200 l barrels and left for at least 6 months. After six months, the urine liquid diluted with water can be used in the garden (Krause & Jacobsen, 2011). The faeces mixture with sawdust, before application in the garden, is kept in a pile for a whole year. The land plot size is big enough to allow the composting and oxidation processes finish completely with a certain guaranty.

An extra portative toilet can be made for outdoor use in warm weather conditions. Ole Ersson has developed and uses for years in Oregon the so-called “Humanure Toilet System” or “1 Dollar Toilet”. He used an oak toilet seat, screwed it to a casual 20 l plastic bucket and cut out 70% of the bottom of the bucket. As a result he has a portable toilet pot to be used anywhere on the land plot. Furthermore, Ersson writes, that, if the substrate is collected in piles and frequently turned around, in Oregon it gets warm enough to kill the pathogens (Del Porto & Steinfeld, 1998), (www.rdrop.com/users/krishna). As in this project, the owner could have 1 ha of land and a hedge all around, it is practical to use this method in a combination with some fresh grass or saw dust as a cover to ensure the composting process.

The third toilet option for warm weather use – a simple outdoor composting toilet. Approximately 1.5 m$^3$ space for faeces and urine could be planned with a small wooden house above it, with a possibility to close it. Most probably, straw or hay could be used as a faeces cover in the mixture with sawdust.

**Constructed Wetlands**

A constructed wetland (CW) is an artificial wetland created for an anthropogenic
discharge treatment such as municipal, private or industrial wastewater, or storm water runoff. Constructed wetlands are engineered systems that use natural functions of vegetation, soil, and organisms to treat different water streams (Wikipedia, 2016). Regarding sustainability in this specific project, constructed wetland as a greywater treatment plant is chosen because of the following reasons:

- the local greywater treatment using plants and microorganisms should be sufficient;
- another possibility is to store the wastewater, as no communal wastewater treatment plant is around, but that would be expensive and not ecological, because heavy transportation with transportation ways exceeding 40km would be regularly needed.

CW can be divided into the overland flow/surfaceflow wetlands and subsurface flow wetlands. In this work, a subsurface horizontal flow wetland (HFCW) is used.

In this project the major expected constituents in greywater are soap from washing, grease from food, sand (from washing vegetables), hair and skin particles from showering and particles from clothes. There should be no faeces or urine in greywater, as the dry toilet is constructed separately.

**Pre-treatment Settling Tank**

In HFCW, clogging mostly occurs as an obstruction of the inlet area by suspended solids or accumulation of a biofilm (sludge). It is caused by insufficient pre-treatment, high loading, an undersized inlet area or filter material, which is too fine. Therefore, a two-chambered pre-treatment is planned to reduce the pressure on the HFCW inflow area. The first chamber part is 60% of the total pre-treatment volume.
Most of suspended solids settle at the bottom and the grease floats on the water surface. The second chamber has rough suspended solids free water and it gathers some more, finer SS. For the practical construction, a 1m deep concrete well installation is used with total volume of 1m³. There are different opinions about the pre-treatment volume, from no need at all (only grease capture needed) to 3m³ per person. As an important factor for this project is on an average low income, only 1m³ for all 5 people could be constructed at the beginning. In case of an urgent need to increase the capacity of pre-treatment, it can be done by adding more concrete rings above each other or next to each other or combination of both depending on the local situation.

HFCW Plan

The HFCW is dimensioned for five people. The explanations of the dimensions follow further in this chapter. Plants are shown only for a visual effect and do not represent the actual situation.
Following figure shows the HFCW after pretreatment, where grease and suspended solids are gathered. The inlet pipe has a slope of 0.1 – 0.5% to ensure greywater movement without pumping. The most important area in CW is the inlet area, which due to nutrient inflow and sludge growth could be clogged. Therefore, substrate at the inflow area is a rough 4 – 50 mm gravel in diameter. This gravel size ensures longer CW lasting without clogging. The outlet wet well defines the water level in the CW. The wet well has to be well covered, insulated in winter to avoid water freezing. Therefore, an open access to the well is needed. In case of frost, the ice can be mechanically removed by drilling a whole in the pipe. Commonly above the well straw in any form or hard foam, blocks are used in very low temperatures (Mander & Jenssen, 2003).

While the surface of the filter is kept level to prevent erosion, the bottom slope should be 0.5-1% from the inlet to the outlet, to achieve good drainage (Hoffmann, Platzer, Winker, & von Muench, 2011). The organic loading per surface area should not exceed 4-10 gBOD/(m²·d) in cold climates or 16 gCOD/(m²·d). The hydraulic loading should be 60-80 mm/d for greywater (Hoffmann, Platzer, Winker, & von Muench, 2011).

The GW flow from straw bale house through pretreatment tank until CW will be
directed in 110mm PVC wastewater pipe. Outflow from CW in 10m length is underground in a PVC pipe and afterwards is connected with an open surface ditch, where the GW flows openly to pond 2, where last after-treatment can take place and afterwards leaves the plot in a natural ditch.

**Nutrients**

As most of the nutrients in the wastewater are from urine and faeces and in this case, these substances are treated separately, excessive nutrients in the greywater are not an issue of a high importance.

*Nitrogen*

Nitrogen is an important nutrient that is efficiently absorbed and eliminated by CW either bound in organic compounds or transformed into gases like NO, or NO. According to H.Kadlec&D.Wallace (2009) and Mander& Jenssen's (2003) experience, the total nitrogen after the greywater treatment in CW normally do not exceed the EU regulations for nitrogen in the treated wastewater TN: 15 mg/l N.

*Phosphorous*

The main sources of phosphorous in greywater are the application of dishwashing and laundry detergents. The main reduction process of P is the establishment of phosphorous compounds in the soil – filter material through chemical – physical processes (Ambros, Ehrhardt, & Kerschbaumer, 1998).

*Cold Climate*

All horizontal flow wetlands perform similarly, removing BOD, SS, bacteria and nitrate very efficiently. Phosphorous or ammonia removal requires a specialized treatment. Living plants in a CW are important to provide litter on which aerobic biofilms grow.

Most constructed wetlands show the same or sometimes even better performance in winter, than in summer. One of the reasons for that is the possible higher solid
accumulation in colder climate CW, than in warmer climates (Mander & Jenssen, 2003).

Generally, greywater is slightly warm, when leaving the house and entering the treatment system. In addition, the 110 mm pipes are insulated, to reduce the construction depth. Thirdly, vegetation above the pipes is planted, ensuring another layer of protection against cold. Therefore, with these three measurements, the pipe depth of 0.6m underground is enough even in the coldest wintertime (A. Schönborn, ZHAW, personal communication, 2017).

Water Budget

\[ Q_o = Q_i + A \times (P - ET - I) \]

where

- \( Q_o \) = Flow rate in outlet, m³/d
- \( Q_i \) = Flow rate in inlet, m³/d
- \( A \) = Wetland area, m³
- \( P \) = Precipitation rate, m/d
- \( ET \) = Evapotranspiration,
- \( I \) = Infiltration rate, m/d

\( Q_i \) – an average water consumption per person per day in Latvia is 150l and around 50% is used for flushing the toilet (Tilgalis, 2004). As in this project, there is a dry toilet planned and the household is planned for environmentally friendly people, it is calculated with 75l per day per person. The further calculation is done for five people, an average size family and a guest, therefore \( Q_i = 375l/d = 0.375m^3/d \).

\( A \) – According to Sakkas (2012), for horizontal CW systems, 1 to 5m² per person has to be calculated, thus, 5m³ are projected for blackwater (including the toilet wastewater, that contains more than 80% of total P). As the projected household has an abundant land resources and CW provide a great habitat for different endangered bird, amphibian, reptile and other species, a water surface \( A - 12 \) m³ is planned, that
should be enough for five people with even average water consumption. As only organic substances should be used, and environmentally aware people live there, less water and less nutrients end up in the CW in comparison with average.

P – The average precipitation in Latvia, Kurzeme Region is 667 mm/year and since 1976 it has had a tendency to increase (Latvian Environment, Geology and Meteorology Center, 2011). Therefore P = 667mm/a = 0.00183 m/d.

ET – 0.004 m/d, is used as an average ET value (H. Kadlec & D. Wallace, 2009).

I – as the HFCW bottom is constructed out of compressed heavy clay, an infiltration rate of 1mm/h = 0.024m/d is used (Natural Resources Management and Environment Department, 2008).

\[ Q_o = Q_i + A \times (P - ET - I) = 0.375 + 12(0.00183 - 0.004 - 0.024) = 0.06096m^3/d = 61l/d = l/h \]

The calculated flow rate is extremely small and practically, it could be interpreted, that there is enough water for plant growth, but in practice, there is no outflow visible. Furthermore, only 1mm change in assumption of heavy clay infiltration rates might lead even to negative outflow rates – total infiltration in CW.

**Filter Substrate**

The filter substrate has to fulfill two main functions:

- be permeable, so that the GW can easily pass through it;
- provide a maximally big total surface for microorganisms to grow and develop on.
These two functions are direct contradictions, as the coarse-grained substrate would provide better permeability but the maximal surface for microorganisms can be achieved through finely grained substrate. Therefore, sand and gravel (0-8mm) is normally used as an optimal substrate that provides permeability, a relatively big surface for microorganisms and has enough in-between-space to work against colmation (Ambros, Ehrhardt, & Kerschbaumer, 1998). In the area of the inlet pipe, often a coarse – grained gravel is used, as it is the most sensitive area for clogging.

In practice, it is assumed, that 5m³ of substrate for a person for black water is needed (Ambros, Ehrhardt & Kerschbaumer, 1998). For this project, 1.5m³ per person was taken, because of the low nutrient content of GW. This project is constructed for 5 people, meaning 5 x 1.5 = 7.5m³ substrate of sand is enough.

Dimensioning
As the water surface area is 12m² and the substrate volume of 7.5m³ is to be provided, the depth of CW is 0.825m and volume 10m³. The width of the CW is 3m and length 4m. Furthermore, the second pond under the CW for spawning of different amphibian species as well as some insects has been constructed. The projected area is famous for its high density of the European tree frog Hyla arborea. A reintroduction project was started during the 1980s around the household project area and recently the European tree frog has successfully spread in approximately 40 km radius around the reintroduction spot.

Plants Used in CW

The most common plant species used in CW is the common reed Phragmites australis. Because the CW is constructed just 30m away from the house and the common reed can grow up to 4 meters, rather smaller plant species are used. Macrophytes rooted in
the soil like broadleaf cattail Typha sp., iris Iris sp, bulrushes Scirpus sp. are used. These plants do not reach the height of 3m and iris species have beautiful violet flowers.

Floating-leaved aquatic macrophytes: these include both species which are rooted in the substrate, e.g. Nymphaea spp. and Nuphar spp. Water lilies and Potamogeton natans (Brix, 2003) are not used as there is no free water surface in CW. However, they are used in the second pond that comes after CW and is the last step before leaving the plot. When it comes to water lilies, a minimum water level of 30 cm in needed. Therefore, because of the small greywater inflow forecast and possibly different clay infiltration rate, there is a rather small chance, that there is enough water for water lily growth. To ensure enough water for plants, a part of roof runoff was directed into CW. Usage of surrounding water is avoided, as it might transport silt and clay particles into CW, what might lead to clogging (A. Schönborn, ZHAW, personal communication, 2017).

As there are other lakes and ponds in the area, seed transportation is very likely to happen and different additional local plant species could develop in the CW. Seeds might be transported with wind or with the help of different animals, especially birds. On the other hand, common reed tends to overgrow all other CW plant species and dominates strongly.

Cleaning, Plant Cutting

It is necessary to weed out grasses and other plants with fibrous roots, as they clog the pore space in the gravel. Once a year, it is needed, to cut back the tops of wetland plants and they can be used to mulch the garden. After several years, it might be needed to thin the wetland plants. Therefore, it is advised to donate them to a friend’s constructed wetland or local restoration project (Greywater Action, 2017).

Permaculture Design

Permaculture design should be used in planning private family plots as well as community ground. The main principles are similar. This Chapter is divided in two
parts. First, in 9ha Design part the whole community ground will be shortly represented. In Second part, a more detailed plan of a single household will be described based on initial situation.

9ha Design

The three family domains will be located at the northern part of the eco village and borders the main unpaved road. Between the road and family plots, a living hedge at least 6m thick will have to be planted to avoid dust, limit noise, ensure privacy, secure from cold northern winds, purify air and provide natural habitat for beautiful birds, which will ensure a pleasant, always changing diversity of songs. The fourth family household will be located east from the community pond, underneath the other three family plots. It will be inhabited by one of the ecovillage project grounders – Karlis Kalns, whose family lived at this exact piece of land for almost 3 generations.

All four family households will be approximately 1ha big, and the community pond is planned to be 0,3ha of water surface. It will be used by family, community, volunteering, and workshop member groups as well as other visitors. The planned pond plot is naturally wet and minimal excavator use is needed to construct a pond of a great size, as working with the environment. The foundation is dense clay and water level will have some natural increase in spring and fall, and decrease in summer months, but minimal enough not to consider it a problem. The pond will have a natural runoff water from surrounding 3,5ha of land times 670mm annually, minus 50%. Evapotranspiration and groundwater, plant water loss gives very roughly up to 7 000 m 3 of water per year. Lack of water in Climate in Latvia is not a problem and after a construction of this pond, automatically a rainwater reservoir and an amazing habitat for aquatic flora and fauna of approximately 5 000m3 and depth of 3 – 0,3m (for amphibians) is ensured. During the construction of pond, the very nutrient rich organic material will be delivered up north to the family plots, where rich
organic gardens can be developed afterwards. While deepening the pond with bagger, the nonorganic material - heavy loam will be used for dam construction, because of its natural waterproof characteristics.

The community pond will be a border between private family and community property and beyond it will be the community land of 4.6ha land, of which 0.7ha of existing forest of spruce tree, willow, ash and oak trees in average age of 70 years. Another 0.2ha will be planned for infrastructure like roads and buildings; therefore, the beginning size of the Community Supported Agriculture land is 3ha. More information can be found about the CSA project in the Economic Dimension. Another 0.4ha of community is open to be used for other purposes like constructed wetlands, individual trees, bushes, animal breeding, flowerbeds and other. Altogether landsize is 9ha. Thus, bordering area has a lot of extensively used or even abandoned landed, which provides a potential of developing intentional community.

A community sauna is planned to be just next, south from pond, so that cold bath in a pond afterwards can be enjoyed. A community natural underground basement in size of at least 15m3 for raw vegetable conservation is planned. Above the basement a community library for common usage is planned, where instruments, tools as well as some small working area is necessary already in initial stages of project.

Furthermore, one of the first community buildings will be made of cob and straw, as most of them will, on a small scale with some 40m2 of living area, which will be used intensively for living at initial stages of the project, and afterwards for volunteering, visitor, CSA members and workshop participants as well as other interests. Depending on demand and cost relations, several small-scale independent cob houses might be constructed, hopefully most of which during natural building workshops led by invited specialist.
All the measurements are made in an online cadaster information system www.kadastrs.lv, and before precise planning, geodesic measurements for land borders and ownership documents have to be made.

Figure 12. 9ha plan draft drawing
Possible permaculture design structures of a family plot of 1ha

Figure 13. 1ha design plan

This plan is constructed based on initial situation in projected area with Google maps coordinates for approximate house position 56.544513, 21.620357.

The following description with plan is made for the family plot for Karlis Kalns, located south from the three other family plots and east from community pond. Open-source designs will be provided to new members for the construction of their houses. The design of the individual plot of lands, including their gardens, will be in coherence with the entire plot design but will also be flexible to ensure that new members can pursue their sustainable living dream.

The forest takes the area of 0.3 - 0.5 ha. This area of forest should provide the family with enough yearly firewood for heating and cooking for generations. The most
Important functions of the forest are production of own firewood, production of food (diverse wild berries, mushrooms, nuts, edible wild plants) and recreational purposes. Currently on the project plot there are linden trees Tilia sp. older than 100 years, several mapletrees Acer platanoides, a birch tree Betula pendula, oak Quercus spp., apple-tree Malus sp., cherry tree Prunus avium, plum tree Prunus sp., pear tree Pyrus communis, willow Salix sp. and other trees. More birch Betula pendula, pine Pinus sylvestris, spruce Picea abies, beech Fagus sylvatica, yew tree Taxus baccata and other trees are planned. The most widespread tree species in Latvia are pine trees Pinus sylvestris, spruce trees Picea abies and birch trees Betula pendula. The planned forest contains at least 50% of these three tree species. The aim of the forest is not only an economical profit, rather provision of a rich habitat for diverse bird, insect and some mammal species. It provides pleasant microclimate and increases moisture in close area and soil. Forest purifies air, calms the mind, protects from cold northern winds, functions as a visual protection, border and has many more benefits. It is one of our goals to build a social enterprise which includes people from the neighboring villages in the management and enjoyment through a Commons Forest Trust.

A hedge around the whole property is planned with a goal to protect the territory from wild mammals such as roe deer and red deer. As these mammals jump in height up to 1.5m, the width of the hedge has to be at least 2m. Currently Swiss subsidies for biodiversity in agriculture are given for existing life hedge projects, which are at least 2m in width, as it is the minimum width for optimal bird nesting (Der Bundesrat, 2013). The hedge is planned to have at least 20 different local bush species, each at least 3% of the total hedge plants. The local bush species like European elderberry Sambucus nigra, common spindle Euonymus europaeus, hawthorns Crataegus spp., honeysuckle Lonicera xylosteum, guelderrose Viburnum opulus in average conditions have a height of 2 – 10m. Cutting of the hedge is planned every few years to a height of approximately 1.4 m. However, both sides of the hedge are grazed
by household animals, either privately owned or rented. The hedge provides birds, butterflies, bats and mammals with a natural green corridor, some nesting opportunities and food. The hedge, as it is longer than 400m, has a great potential in organic, locally managed tea or jam production, as most of wild bush species have healthy beneficial nutrients, minerals and important acids in them.

A vegetable garden should be constructed according to permaculture principles and is exclusively organically managed. Regarding problems like wind and water erosion, lack of organic substance in soil, growing red list species - permaculture and organic gardening are the most appropriate ways of sustainable development in agricultural industry. Globally practiced industrial monoculture-agriculture is an important cause of biodiversity loss, wind and water erosion, humus and organic layer depletion. In the long term, locally managed organic gardening requires more working hours, but quality of food and sustainability strongly increases.

The size of the garden is planned to be approximately 0.3 ha per family, as it should provide five people with their own vegetables (Statistisches Landesamt Sachsen Anhalt, 2016). The vegetable production of these individual plots of land is not fully market-oriented, rather extensively managed with small plots of wild plants in between the vegetables to provide higher functional biodiversity. The more productive plot of land will be with the Community Supported Agriculture project.

In case of building a private house of natural materials, clay can be used from the plot, which means, during building the house walls from local clay, a pond stands that can be used for watering the garden at its initial stage. The rainwater from the house's roof could be directed to the newly constructed pond. Another pond could be created with a function of greywater post-treatment, after the constructed wetland treatment section. It provides a habitat for different water plant species as well as for birds, amphibians, and insects, including dragonflies, fish and other species.
Community Ground

Shared ownership community ground could vary at communities initial stages from 1 – 5 ha. It would be planned similar to private plots with own forest for firewood, wind and visual protection, pond for gardening and organic south exposed garden and life hedge around as visual border and natural habitat. A small plot of south exposed land would be prepared for dry and warm conditions loving plant and animal species. The organic matter would be taken away and some gravel and stones for reptiles would be placed to create a specific dry habitat and increase local biodiversity.

In the lowest available area is a naturally moist place, where a community, low cost pond could be created for recreational and environmental reasons.

See Economic Dimension Chapter, legalities section for more information of on Dieva Daba’s ownership model for the individual plots of land and community grounds.

Renewable Energy and Carbon Neutrality

Dieva Daba will be designed with renewable resources and carbon neutrality for the following uses in short and long term:

- Housing
- Heating & Energy production
- Food production

**Housing**
Housing for the community and other community buildings are planned to be made from simple wooden constructions and straw bale housing with cob plaster and reed roofing. The basic idea is to use as many natural materials as possible, depending on the price, since the project has to be affordable for people with an average income, in Latvia the minimum income below 500€ (I read this on the Iskilile Transition website). The foundation construction is made from stones with a lime - gravel mixture in between. Natural stones are used, because they can be found in nature from the region and in
comparison to the concrete foundation, have much less negative impact on nature. Similarly - lime, which is a product of limestone and firstly, it allows natural material breathing (moisture exchange) to happen, secondly, it has less chemical substances as concrete. The wall construction is held by a wooden frame with whole straw bales as insulation and plastered with several layers of cob (sand, clay, straw mixture) from the inside and outside. The wall thickness - interior cob 5cm, straw bale – 45 cm and exterior cob – 10cm – will be together on average 60 cm, because it is handwork and it is normally slightly different. (P. Wojciechowska, personal communication, 2016).

The roof construction is made from wood, insulated with whole straw bales and on the top approximately 35cm of reeds. In between these two layers, a 5 cm gap is left for air circulation. Here are some drawings of the intended buildings:

Figure 14. House design plan 1
Figure 15. House design plan 2

More on Natural housing with natural materials is to be found in the following chapter on Natural Materials.

See more information about the financial and legal aspects in relation to the construction and ownership of these houses in the Economic Dimension Chapter, section 5.
Heating & Energy Production

For centuries individual households in Latvia have been heated with locally gathered firewood, as it is locally available and is currently considered sustainable, because little transport is needed and wood can be locally renewable. Therefore, the whole house is heated with locally grown firewood. The fireplace is used for cooking, heating up the water for shower, kitchen sink and lavabo. The fireplace has a glass door directed towards the living area for recreational and light purposes. The firewood production per year per hectare generally depends strongly on the soil conditions, forest age, tree species, climate and other factors. Therefore, firewood production from 1 ha/a in Latvia is 5 – 10 m (Jansons, 2016). The annual consumption of firewood per household depends on many factors like the size of the house, insulation quality, and annual weather change. A passive house with 60m needs just 1m per season, but a classical detached house with 240m can use up to 26m of firewood annually (Krauklis, 2013), (Lejnieks, 2012). As this specific house is envisaged to be well insulated and approximately 80m, it is assumed, that 0.5 ha of a forest should provide the house annually with enough firewood for generations. The rest of the forest is managed with the goal to increase biodiversity and for recreational benefits through the Commons Forest Trust.

The energy per year in MJ is calculated. It is considered, that from 1kg dry firewood 16 – 18 MJ of heat is produced (World Nuclear Association, 2016).

For further annual calculations the bulk stocked firewood density of 310 kg/m is used. It depends on the tree species (in this case calculated with the dominating tree species a spruce tree) and way of stocking and measuring wood (Food and Agriculture Organization of United Nations, 2015). As mentioned in Building Materials building materials – a straw bale house can be approved by Passive House Certificate, meaning less than 15 kWh/a per m energy consumption for heating. The whole 80m house per year should consume less than 1200 kWh. In MJ – 1200 x 3.6 =
4320MJ. Therefore, a figure of 4300 MJ per year has been used for further calculations for the scenario “optimistic”. A “pessimistic” scenario with energy consumption twice as high has also been made, calculating with 8600 MJ per year.

Therefore, in the scenario “optimistic” = 4300/17 = 253 kg of firewood per year needed, or 253/310 = 0.82 m of firewood needed. In the scenario “pessimistic” firewood twice as much is needed, respectively 506kg or 1.64m.

Plans for electrical energy production on site, would come from various renewable sources - solar-photovoltaic (viable in summer months) and wind.

More than 50% of average individual households in Latvia, in year 2012 consumed less than 100kwh per month (AS Latvenergo, 2012). In 2015 the situation has changed and 50% of population consumed only less than 130kwh per year and 50% consumed more than 130kwh (Central Statistics Council Database of Latvia, 2015). Therefore, the median value of 130kwh per month (1560 kWh per year) per household has been used for further energy consumption calculations in the scenario “optimistic”. For the pessimistic scenario 250 kWh per month (3000 kWh per year) has been calculated. It is a realistic amount of electricity in case of having a small livestock and not having the latest electricity bulbs and other electricity demanding household gadgets.

Potential yearly photovoltaic solar energy production has been calculated using the following formula and data:
\[ E = A \times r \times H \times PR \]

<table>
<thead>
<tr>
<th></th>
<th>E = Energy (kWh)</th>
<th>A = Total solar panel Area (m²)</th>
<th>r = solar panel yield (%)</th>
<th>H = Annual average irradiation on tilted panels (shadings not included)*</th>
<th>PR = Performance ratio, coefficient for losses (range between 0.9 and 0.5, default value = 0.75)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1289 kWh/an</td>
<td>10 m²</td>
<td>15%</td>
<td>1146.1* kWh/m².a n</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Table 5. Yearly photovoltaic solar energy* retrieved from NASA meteorology satellite data (https://eosweb.larc.nasa.gov/sse/)

As you can see from the data following, the difference between summer and winter month’s sunlight hours is quite drastic:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Yearly</th>
</tr>
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<tbody>
<tr>
<td>Average Sunlight</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>04:57</td>
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<tr>
<td>Hours/Day</td>
<td>01:09</td>
<td>01:58</td>
<td>04:30</td>
<td>06:21</td>
<td>08:38</td>
<td>09:05</td>
<td>08:54</td>
<td>07:34</td>
<td>05:21</td>
<td>02:56</td>
<td>01:07</td>
<td>00:48</td>
<td></td>
</tr>
<tr>
<td>Average Daylight</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td>12:00</td>
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<tr>
<td>Hours &amp; Minutes/</td>
<td>07:29</td>
<td>09:24</td>
<td>11:46</td>
<td>14:15</td>
<td>16:29</td>
<td>17:44</td>
<td>17:10</td>
<td>15:11</td>
<td>12:44</td>
<td>10:14</td>
<td>08:01</td>
<td>06:50</td>
<td></td>
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<td>Day</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Percentage of Sunny (Cloudy) Daylight Hours</td>
<td>16(84)</td>
<td>22(78)</td>
<td>39(61)</td>
<td>45(55)</td>
<td>53(47)</td>
<td>52(48)</td>
<td>53(47)</td>
<td>51(49)</td>
<td>43(57)</td>
<td>29(71)</td>
<td>15(85)</td>
<td>12(88)</td>
<td>41(59)</td>
</tr>
</tbody>
</table>

Table 6. Summer/winter comparative of photovoltaic solar energy
Therefore, wind energy will provide the bulk of the energy resources in winter, using a small scale wind farm.

An alternative energy source like solar panels or wind turbines has much less environmental impact and would be preferable to use. Furthermore, in last 50 years, discussions about the so-called “free energy” are present. According to the scientists like Nicola Tesla, Nassim Haramein, Peter Lindemann, Bruce DePalma and many others, a free energy or zero point energy source is available (Lindenmann, 2001) (timetodo.ch, 2013)(Gruber, 2012). Since 2017 a company called Innovatehno started to sell in Europe the world’s first free energy generator (Innovatehno, 2017). Scientifically, as far as known, none of these patents has been proven to work.

**Food Production & Consumption**

There will be an area of the common grounds designated for the Community Supported Agriculture. Externally, the community will initiate and manage a CSA project which will be a way of localizing the economy by collaborating with local and regional farms that will provide a variety of produce. As for other consumption of goods, they will be preferably but not exclusively organic products - preference will be given to local, regional and proximity produce, rather organic produce which is shipped from a long distance than long distance shipped organic. Not only will this reduce the carbon footprint but will help to build personal relationships with farmers in the area which will, in the long run, make it much easier to encourage organic farming techniques which are both more economically and ecologically efficient.

The organic farming carried out on site and off site, composting techniques, using perennial plants to produce food, discouraging the use of pesticides that kill essential bacteria and funghi in the soil and by adding dung to the soil will increase the soil richness and amount of humus in the area which will improve carbon sequestration.
Green Building Materials

The basic idea for the planned buildings is to use as many natural and local materials as possible, depending on the price, since the project has to be affordable for people with an average income, and ecological with small or even positive environmental impact.

Description of individual materials

Reed

Reed Phragmites australis is one of the biggest grasses in Europe and has been used for human needs for centuries. The Republic of Latvia only at its lakes has 13 000 ha of reeds. An average harvested biomass is 5 - 10 t ha⁻¹ y⁻¹ in Europe and 7.2 in Latvia. The total yield in 2010 in LV was 69 000 t, that can be harvested from 10 000ha (Köbbing, Thevs, & Zerbe, 2013/14). According to Liede (2017), reeds have a low packing density of approximately 160 kg/m³. It is practiced to cut reeds with a specific moving machine adapted to wet soil conditions, but for packing and loading for transportation, handwork is required. During the transportation and packing of reeds, approximately with 15% of loss has to be calculated (Liede, 2017).

The reed roof has to be at least with a slope of 35 degrees. A roof with reed layer of 35cm thickness is considered to last up to 100 years. Thus, it is recommended to make a reed roof inspection each 5 years (Niedru majas, 2015) (Jumti un fasades, 2010).

Wood

The roof is built based on wooden constructions. Wood has a function of holding the roof and transfer the weight from the roof onto the foundation. Wood for construction is locally ordered, with maximum transportation distance of 60km. For calculations, a density of 450 kg/m³ is assumed, as spruce and pine tree wood is used for construction (The calculator site, 2017).
Straw Bale

A straw bale as a building material is chosen because it fulfills the requirements of this project. According to the project aims and philosophy, the building materials should have a minimal negative impact on the environment; they are locally available and financially affordable. That is what straw bales are like.

Straw is an agricultural by-product that represents the dry stalks of cereal plants after the grain has been removed. It is composed of cellulose, hemi-cellulose, lignin, and silica (King, 1998). A typical agricultural straw bale varies in size of 375 X 450 X 900 up to 400 X 500 X 1000mm (Forbes Lucerne, 2014), (Wikipedia, 2016).

![Straw Bale Image](https://example.com)

The life span of a straw bale house can be expected to last over 100 years (Gunawardena, 2008). Long exposure to moisture is the greatest threat to straw-bale longevity.
Although it typically requires relatively high moisture content of 20-25% of the total weight for fungal growth and decomposition to occur” (King, 1998). A key attribute of straw is its thermal insulation properties. Although its U-value is similar to most of other insulation materials such as cellulose or mineral wool (density of 110-130 kg/m³, would have thermal conductivity between 0.055-0.065 W/mK), typical assembly widths between 450-600 mm enable straw-bale walls to achieve a ‘super-insulated’ state (width of 450 mm would have a U-value of ~0.13 w/m²K) (Magwood & Mack, 2000), (Kierulf, 2014). The “R-value for straw bale walls has been reported to range between R-17 and R-65” (Offin, 2010). Building with straw bales as the main material for the wall and roof insulation, after the experience of several successful projects, even Passive House certificate criteria can be achieved (Straw Works), (Lea, 2011), (SustainCo, 2014). To receive a Passive House certificate, several criteria have to be fulfilled. Space Heating Demand - not to exceed 15kWh annually OR 10W (peak demand) per square meter of a usable living space (IPHA, 2017).

“Fire safety remains one of the most common concerns for straw bale construction. The fire tests done on plastered straw bale walls to date prove them to be highly resistant to fire damage, flame spread and combustion…..A plastered wall has been recorded to resist the transmission of flame and heat for two hours” (Offin, 2010).

Cob

Cob is a mixture of sand, clay and straw. The proportions of sand and clay vary from 1:1 to 4:1, depending on the local clay characteristics. The amount of straw added to the mixture should not exceed over 5 - 10% of the mixture volume. (Dubiel, 2016). “The word ‘cob’ originates from the Old English word for ‘loaf’, and describes an earth construction form found in Southern England, notably in Devonshire” (Lynne & Cassandra, 2000). “It is one of the simplest and oldest forms of construction in such parts, with the historical records dating back as far as 1212. In Devonshire, a few of the sixteenth and seventeenth century buildings have survived with some original cob,
although the majority of buildings date from the eighteenth and nineteenth century” (Ley, 1995).

Nowadays, in practice, straw bale houses in different climates are generally plastered with the local cob mixtures. Cob ensures optimal moisture exchange and protects the straw bale efficiently from a mechanical influence. Moisture exchange is crucial – in case of increasing moisture in straw bales, fungus growth and straw decomposition could be the consequences.

Depending on the moisture content and density, the thermal properties of cob can vary. An average density of wet cob is 1.900 kg/m 3 (Gunawardena, 2008). The density used for other calculations is as following: for dry clay - 1600 kg/m 3, gravel – 1680 kg/m 3 and dry sand - 1555 kg/m 3 (The engineering ToolBox, 2017). Density of lime - 2211kg/m 3 and granite - 2.65 and 2.75 g/cm 3 (M-I Swaco, 2011), (Wikipedia, 2017).

Foundation

A continuous concrete foundation is a fairly recent invention. When we look at history, the oldest surviving foundation structures throughout the world are sitting on individual stone blocks and packed sand and gravel, cemented together with mud mortar. As an example 800 – 1200 year old Anasazi in the South-western United States (Hunter & Kiffmeyer, 2004).

Therefore, a natural stone foundation with lime and gravel mixture in-between is suggested. The foundation - 1.0 m deep and 0.2m above the ground level, altogether 1.2m (Bee, 1997). This kind of construction requires more working hours for the construction work, but eventually, regarding sustainability, a foundation like this could last for centuries. Firstly, natural stones, lime and gravel in the Simapro software (for Life Cycle Assessment) model are not disposed but left for future usage. Secondly, regarding building legislation in Latvia, the existing foundation on a plot ensures the building permission without any extra procedures, which are needed in a classical case without having an existing foundation.
Floor

There is a floor suggested, completely out of natural materials – gravel as the base layer 0.1m, a layer of cob 2 cm and wood 2.5 as the finishing layer. The cob layer must be at least 5cm above the outside ground level. (Bee, 1997).

Building praxis

An option of a sustainable private house is shortly suggested in previous chapter under “Housing”. Other sustainable materials like hempcrete, straw blocks, round wood, stones for wall construction can be considered, but all have some cons. As an example hempcrete production requires specific machinery to clean the hemp from dust and currently, nothing like that is seen in the close area and France companies, that dominate EU hempcrete market has a high price for Latvians and high transportation emissions. Straw blocks are made in a company in Latvia and Lithuania, but the price is higher in comparison to self-made products. In addition, the price of round wood and heavy natural stones is also high.

Local Benefits from Building with Natural Materials

In Latvia, reed has been used for centuries as a roof material and it has old and sustainable traditions. As Latvian territory is mostly flat and ground water level is high, there are optimal conditions for reed growth and development. Because of excessive eutrophication, caused by NPK based nutrients in agriculture, there are excessive reed monocultures in most of Latvia’s lakes. Many areas covered with reed are under protection and highly valued in the Central European countries because of their function and importance as a biotope and natural habitat for different species. On the other hand, many wetland areas in Latvia are expanding in part because of the excessive nutrient inflow from agriculture. Therefore, frequent cutting of reeds provides a new, open, to the sun exposed vegetation that is valuable for different orchid species and different protected animal species which do not prefer thick
reeds as a habitat. Furthermore, reeds on a house roof function as an optimal wild insect house. As it is known, currently wild bee populations in most of Europe are under threat because of intensive agriculture and agricultural chemical usage. In addition, regular cutting of reeds close to lakes improves water quality as in reed bounded, abundant nutrients like nitrogen and phosphorous are taken out of aquatic systems.

As a result, the software Simapro (for Life Cycle Assessment) calculates 160 eco-points for 1 kg of reeds for Energy Resources Eco-factor. In this specific project in Latvia, where there is so much biodiversity and environmental benefits, I consider this way of eco-point calculation for reeds is not suitable.

The natural stone foundation is seen to provide different reptiles and amphibians with an optimal place for the winter survival (Dubiel, 2016).

Another aspect is the clay needed as a house building material. Traditionally it is seen around individual Latvian households from the previous centuries, that the clay was taken out from the earth just at the building site itself, eliminating the need for material transportation and leaving a small scale natural garden pond, which functions as an aquatic biotope. Regarding biodiversity, because of the reed roof, the aquatic biotope and stone house foundation, even though the surface of around 50 m² (as an example) has been used for the house construction, the local 1 ha total biodiversity might significantly increase only because of these 3 components.

Next steps

This chapter looks at different steps still to be taken in future regarding all sections of this project.

This project has mainly focused on one social enterprise - CSA. Thus, as one of the goals of this case study is to become economically self-sustainable, several sustainable and nature friendly and supportive business models will be looked at and evaluated.
As an example - possibility of creating a Commons Forest Trust will be looked at. In this way people in neighboring areas can participate in the management and enjoyment of the forest, thus it could be more a social enterprise, less economically interesting.

Economical activities like creating and selling of Constructed Wetlands and whole wastewater treatment planning for individuals could be offered as a service of Dieva Daba community. Furthermore, there will be different international workshops regarding spirituality, nature and sustainability in the community and seminar house. Different guided excursions for schools and companies of our eco community. Planning and building of natural private gardens with diversity of local plant species and ponds, dry stone walls for reptiles could be planned and built by community members. Selling local plant seeds, seedlings of flowers, trees and vegetables. Constructing efficient rocket oven of cob for private households, therefore extremely increasing efficiency of wood and generating income for Dieva Daba. All of these activities could be proceeded with, but market evaluation, local legislation, needed investments, have to be looked at first. Eco tourism could be another thing to look at, as there are natural habitats, bogs, Baltic Sea, very old monumental trees, even over 800 years of age in close proximity.

Concerning the carbon footprint of the community, further considerations about the transportation of people and goods from/to the plot should be addressed in order to create an efficient transportation plan that minimizes greenhouse gas emissions. This plan will take into account the CSA products delivery, members and visitors travels from/to the community, etc. The community will offer different possibilities to compensate the emissions due to transportation like reforestation of new plots. Making a platform for open source knowledge available for any interested individual is another important next step to be taken at certain stage of this project.
Another practical tool can be creating a Common agreements page for Dieva Daba members or/and community extern members, workshop visitors and other guests. It could include simple actions like no phone calls during a common workshop or ceremonies, washing the dishes after their usage, respecting each other's worldviews on a practical level and other daily issues.

A very important step will be building of first community cob houses. It is planned to do it during workshops by inviting one professional cob and straw bale building specialist who could lead the building workshop. Detailed house plans, building permits, allowances, organization, marketing of workshops are just few of the next steps, after the definite purchase of 9 ha land…

To sum up, this 8 week project addresses briefly most of the issues of high importance for a creation of a locally adapted intentional community. It is efficient, well organized in 4 dimensions of sustainability and created based on local social, economical and environmental conditions. It is a great existing foundation of Dieva Daba, that emerged from close, international team of 4 - Alejandra, Teresa, Michael and Karlis.
References


Worldview Dimension


Social Dimension


Economic Dimension


Ecological Dimension

Most of the content in Ecological Dimension is based on Bachelor Thesis of Karlis Kalns “Self-sufficient Ecological Housing in Latvia - Concept Development and Evaluation” 2017. The detail list of references is to be found in Appendix.

Appendix

Pictures from Dieva Daba territory

The Kalns family house was built in 1935
The house was destroyed during the war few years later. This picture is taken in 1950.

All pictures come from Kalns Family album.
Pictures taken in 2017 of the site

Wild orchid thriving in Dieva Daba territory as a proof of extensive agricultural use and increased biodiversity.
View from North-East corner to the plot of Dieva Daba. The jellowish meadow vegetation on left indicates the extensive usage of the plot, which leads to high biodiversity.
Wild tulips blossoming next to eatable Aegopodium podagraria and many other plants.
Trollius eropaeus next to healing tee and eatable wild plant – Filipendula ulmario, which is a character of natural habitat – Filipendulion. It indicates wet soil conditions and as it is geographically in a small valley, a community pond is planned right next to this habitat.
Geographically low and wet place for community pond, where in background could be sauna, community basement, community hall, gardens, many more created by society of thriving and sustainable change.
References to Ecological Dimension


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