Sustainable development and tourism growth

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4.1. Difficulties to implement a vague but consensual concept
4.2. Limited capacity of the biosphere to absorb pollution
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The challenge of global warming for snow tourism (Alpes)
The evaporation of the Aral See in Central Asia (Ousbekistan)
Destruction of the Grand Barrier Riff (Australia)
Physical planning and visitors’ management Mont St- Michel (France)
Farmer as the gardener of rural landscapes in the Schwarzenburgerland (Switzerland)
The importance of architecture for the beauty of the landscapes, Grisons (Switzerland)
From a paradise to a garbage pit

„It seems to me that the earth, our common house, is becoming more and more a garbage pit“.

Pope Francis, Encyclical letter,
24th May 2015
4.1. The difficult implementation of a vague but consensual concept

Does the consensus of the international community on the holistic concept of sustainable development contribute to a better real world?
Keywords

Western development model

Limits of growth

Sustainable development

Decouple pollution from growth
The Western modernisation model: dogma of development for the whole world

Harry S. Truman launched in his famous inaugural address as President of the USA on January 20, 1949 the “Four Point Speech” the idea that “we must embark on a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas”.

The idea of became 1989 by declaration of the UN General Assembly a human right which was rather successfully implemented. The millennium goals of UN to reduce poverty worldwide by half, where achieved in 2010. The new president of the World Bank thinks that it is within our grasp to make the world free of poverty.

- UN, General Assembly, A/RES/41/128, 4 December 1986, Declaration of the Right to Development

- World Bank Group, Uim Yong Kim, President, Within our Grasp: a World Free of Poverty, Speech at the Georgetown University, 2 April 2013
The paradox of development: development creates underdevelopment

Underdevelopment is in poorer countries not the contrary of development but its consequence. The adoption of the development model of advanced economies based on education, health, food and political participation for everybody causes negative externalities such as:

- individual motorisation without public transport and good roads which leads to traffic jam and smog;
- medical care without birth control leads to overpopulation;
- lacking recycling possibilities for plastic food cause waste;
- democracy without strong roots favours corruption.
The need to dampen negative externalities of development: accompanying measures in the social and the ecological field

There is in most poor countries **no money left for accompanying measures to implement progress**. It is spent for importing goods such as cars, TV’s or electric dental brushes which are as expensive as in the exporting countries.

Life in traditional villages without electricity, supply of drinking water or sanitary equipment is hard but **the society is intact without unemployment, waste and pollution**. There is a shortage of goods and services which are in these countries not considered as poverty.
The waste of resources was declared as a limit of growth by the Club of Rome in the period of the first oil crisis

2nd March 1972:
The Club of Rome blamed, under the impression of the 1st oil crisis, for the first time the wasteful use of natural resources and pointed out that there are limited supplies of such resources.

Gro Harlem Brundtland, former prime minister of Norway, and her commission launched the notion of sustainable development.

The UN Commission on Environment and Development put forward in 1987 the report “Our Common Future” (Brundtland Report) which defined the notion of “sustainable development” as a tool to reduce worldwide waste and pollution for making the life worthwhile for the actual and the future generations.

The UN Conference on Human Environment of 1992 in Rio de Janeiro, known as the “Earth Summit”, agreed the “Agenda 21” as a guideline to implement sustainable tourism.

- D.H. Meadows et al., The limits of Growth, Universe Books, 1972
- The World Commission on Environment and Development, Our Common Future, Oxford University Press, 1987
The international consensus on the sustainable development: the countries of the poor South and the countries of the industrialised North agreed to cooperate.

The concept of sustainable development is based on a historic comprise between the developing countries in the South and the industrialised countries of the North.

The poorer countries put their first priority always on development in the ongoing dialogue with the rich countries. The rich countries had experienced locally that exponential growth could have perverse impacts on the environment such as polluted water, air or soil.

Common global ecological problems such as climate change or the loss of biodiversity helped both sides to reach a consensus on sustainable development. Consensus is the way political conflicts are solved. They generate in general only “second best”-solutions.
### The conflicts of goals: there is a need to overcome conflicts among goals by setting priorities

**Ecological dimension**

| The consumption of non-renewable resources must not exceed the current production of renewable substitutes, and must be in any case reduced. The final storage of products that are not recyclable must be kept to an absolute minimum. Efforts must be made to conserve the diversity, beauty and aesthetic worth of natural and cultural landscapes. |

**Economic dimension**

The ability to satisfy basic needs, both material and immaterial, must be assured. A minimum standard of living must be assured.

**Social dimension**

The emancipation of all strata of the population and its in political decision-making must be guaranteed.
The decoupling of further growth from pollution:
This is more realistic than the return to the cradle of civilisation

The ecological optimum would ask for limiting energy consumption to products of vegetal and animal origin which the living nature provides under the sustainable impact of the sun rays, and by a total recycling of the waste into the natural cycle.

The economic optimum would ask for growing by maintaining or reducing the actual level of consumption of limited and non-renewable resources in order to avoid further pollution, or in economic terms: to decouple growth from pollution.
Decoupling pollution from growth: the example of civil aviation

Partial decoupling of GHG pollution

Additional growth without increase of GHG = “Carbon neutral”

“Carbon free“

Time

- Technology
- Infrastructure
- Operations
- Compensation

Total traffic

Total emissions
Sustainable development is a political concept. It is vaguely defined and marked by conflicts of goals.

The concept of has the merit to make us think about the finite resources on which economic growth is built and the pollution we cause to the environment by increasing always more our level consumption.

The goal to maintain the quality of life of the actual and the future generation as high as possible is wishful even if we know that nothing is really sustainable in our lives, our society, our economy and our planet.
Questions to be asked

- Which Western idea is behind the notion of development?
- Why do we say that the notion “sustainable development” was born from a confrontation between North and South?
- Why is the notion of sustainable development considered as vague?
- Is it possible to implement the strict version of the sustainable development?
The case
Tourism in the wilderness of the Antarctic:
an exceptional example for the implementation of a strict ecological concept of sustainability

Prof. Luiz Gonzaga Godoi Trigo, Universidade do Sao Paulo (Brazil)
4.2. The limited capacity of the biosphere to absorb pollution

Can we solve the problem of finite resources and increasing pollution by a mix of technological progress for reducing waste and pollution or not?
Keywords

Laws of thermodynamics and entropy

Spaceship earth and capacity of absorption

Biophysical economics

Bioengineering
The limits of growth:  
the laws of thermodynamics limit growth

Are the economy and the nature cyclical? Something of value is lost through the economic process and something lacking in value is gained. If we take nature into consideration, the economic process is not cyclical. A piece of furniture cannot be turned back into a tree.

Industrial production involves the processing of matter with the help of an energy source, which can be either human or mechanical. The process is subject to the laws of thermodynamics. The first of these is the law of the conservation of energy which states that energy can neither be created nor destroyed within the system.
The notion of entropy: the process of devaluation of energy

The second law states that all natural and technological processes are irreversible. All irreversible processes involve the production of entropy. Entropy is a physical measure for disorder in the sense of a uniform distribution of energy and matter in the most convenient state.

The production of entropy is associated with the process of transformation of energy. It always leads to devaluation of the energy and to the dispersal of matter. The amount of energy that can be transformed into a useful product/work is known as exergy, and the amount that is without value is known as anergy.

The sum of exergy and anergy is constant. The production of entropy occurring during this irreversible process increases the anergy at the expense of the exergy.
The role of technological progress: it can dampen the impact of waste of resources for a long period

The production of entropy destroys energy. **It makes the waste of resources to a major problem since waste contributes to pollution.** Waste results in the emission of hot air currents and particles of matter which pollutes the biosphere. The economic sciences have long ignored these effects.

**Wasteful use of finite natural resources is a serious problem.** However the problem has become less urgent following the discovery of new oil and gas fields, **greater efficiency in the utilisation of energy made possible by advanced technology**, and with the substitution non-renewable fossil resources by so called “**new renewable energies**” based on the direct influence of sun or winds. The experts now estimate that the available reserves can last for another 1000 years.
Biophysical economics (Georgescu-Roegen)
Economic growth accelerates entropy. It is a machine which causes scarcity of highly concentrated non renewable energy resources and produces waste and pollution. These processes are irreversible and non recyclable. The ecological problem is the last cause of economic scarcity.

Bioengineering (Odum)
The production of entropy can be stopped through recycling which is assured for another billion of years by the sun. It makes sense to enhance this process by reducing waste and pollution through bioengineering.
The consequences of Georgescu-Roegen’s approach: the problem of finite resources and pollution cannot be solved

The problem of finite resources cannot be solved in the long run. Nothing can help to overcome entropy. Also zero growth is not the answer. If you have to live on an island with basket of bread sufficient for about 10 people, the daily ration cannot be guaranteed forever.

In the absence of some miraculous innovation, such as a new source of energy imitating the sun (nuclear fusion), the ongoing satisfaction of ever growing needs must come to an end. Material comfort must give way to joy of life. A new society should be built. But even a new society would not be able to avoid the laws of nature. These laws are cruelly strict: each child today inevitably means one less life for future generations.
If the sun assures the recycling of the biosphere in the long run, short and medium term the ecological problem can be solved by bioengineering and internalisation of the external costs of pollution into the market prices. Technological process and increasing prices for the energy would probably help to use energy in a more efficient.

Energy prices should therefore be increased for reducing pollution. The ideal solution would be a CO₂ tax combined with a reduction in the taxation of labour. This would establish cost neutrality. It would not have a negative effect on international competitiveness. It would also improve the labour market situation, since labour as a production factor would become less expensive for employers.
Conclusion

The question is if the planet earth is a closed system where consumed rich energy locally diluted can be won back an globally recycled by the natural systems.

If global recycling is possible, the reduction of waste and pollution through bioengineering, appropriate human behaviour and adapted policies makes sense. It is in this case worthwhile to use energy efficiently and to protect the resources.

This will not mean that the planet will not die in a very distant future by the process of entropy, unless a fantastic innovation such as nuclear fusion with its imitation of the sun radiation occurs.
Questions to be asked

- Why do we have an ecological problem?
- What do we understand by entropy and why is it – following N. Georgescu-Roegen – the last cause for economic scarcity?
- Can waste and pollution be mastered by recycling as T. Odum presumes?
- What did K. Boulding understand by “cowboy economics”?
- How can we integrate the ecological into the economic cycle?
The impacts of the local and global destruction of the environment

4.3. Local and global ecological problems

How does tourism contribute to damage the environment?
Keywords

Local ecological problems

Global ecological problems and greenhouse gases

Common worldwide properties

Mitigation and adaptation

Reparation machines
Local ecological problems: tourism causes pollution and has to pay for it

Waste and pollution was for a long time a local ecological problem which could be solved by reparation measures such as catalysers for cars, waste water cleaning plants or technical snowing.

In the field of leisure tourism which takes place in fragile ecologic beach and mountain systems, it was crucial to solve self-induced problems, conform to the principle “polluter pays”.

The humus layer of the soil in the mountains is much thinner than in the flat land (20-30 cm mountain, 120 cm alluvial meadow flat land). There is a higher pollution of the air in mountain resorts often situated in U-shaped valley than in the flat land where the winds can “clean” the air.
Fragile local ecological equilibrium: the example of a winter sports destination

Pollution under the shield of cold air

Resort

Turbulences and dispersion of gas

Agglomeration
New leisure activities in the field of aquatic and mountain sports are becoming more and more intensive.

In the past:
swimminings
ailing

Nowadays:
surfing
canoeing
river rafting
sport fishing
water-skiing
diving
etc.

In the past:
mountain walking
skiing and cross country
skiing
alpinism

Nowadays:
ski bob
ski hors piste
snow boarding
mountain biking
free climbing
paragliding
ultra light aviation
helicopter skiing
e tc.
Global ecological problems
the impacts of greenhouse gases on tourism

Changes in temperature, sea level and Northern Hemisphere snow cover

(a) Global average surface temperature

(b) Global average sea level

(c) Northern Hemisphere snow cover
Global warming in the Alps: increase of 2°C temperature since 1900 in certain regions (three times more than in the flat land)

Beniston, 2004: Kluwer/Springer Publishers
The evaporation of the Aral See as a regional problem: Stalin chased the nomad people from the region and started to use the water for cotton based agricultural production
Dramatic impact of the disappearing Aral Sea on the climate: Frigid windfall from Siberia since the wall of steam and heat from the Sea doesn’t protect anymore the oasis city

Temperature:

<table>
<thead>
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<tbody>
<tr>
<td>10:00</td>
<td>26°C</td>
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<tr>
<td>10:20</td>
<td>9°C</td>
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Khiva, Usbek city in the desert on the silk road, UNESCO Cultural World Heritage like in the fairy tale 1001 night

Caftan against the cold given to the President of the Commissioin for Europe of UNWTO by the Minister of Tourism and Culture of Ousbekistan
High water temperature due to global warming is destroying the Great Barrier Reef in Australia

Bleaching of corals which change from white to gray
The global warming is taking place: early evidence

Melting of the “Aletschgletscher”, the biggest glacier in the Alps

Reduction of length by 3 km and depth by 180 m since 1840
Global ecological problems: tourism is a small polluter but suffers from pollution

The exponential growth of the world economy as a result of the ongoing globalisation process led to **global ecological problem**. The consumption of fossil and non-renewable energy increased in a fast way and in a short period of our history.

World tourism is increasingly polluting but its share of the worldwide pollution is still small. But **tourism suffers from worldwide pollution**. The rising of the sea level because of global warming destroys beaches. Snow as raw material for ski resorts is becoming scarcer. The **tourism related adaptation and mitigation costs** such as technical measures for producing snow or the investment in energy efficient heating solutions in the cold winter resorts, are increasing.
Greenhouse gas emission: the part of world tourism is rather small but increasing

<table>
<thead>
<tr>
<th>Sectors</th>
<th>CO₂ (Mt)</th>
<th>%</th>
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<tbody>
<tr>
<td>Air Transport</td>
<td>522</td>
<td>40%</td>
</tr>
<tr>
<td>Road Transport</td>
<td>418</td>
<td>32%</td>
</tr>
<tr>
<td>Other transport</td>
<td>39</td>
<td>3%</td>
</tr>
<tr>
<td>Accommodation</td>
<td>274</td>
<td>21%</td>
</tr>
<tr>
<td>Activities</td>
<td>52</td>
<td>4%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,307</strong></td>
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Transport: 75% of the GHG emission

Total world (IPCC 2007) 26,400 UNWTO 2007

Part of tourism 4.95%
Local ecological problems are mostly reduced in wealthy countries. There are a plethora of measures against pollution of the air or the soils.

The local reduction of pollution is often accomplished by using “reparation machines” such as catalysers for cars or sewage treating plants. These installations can help to solve local problems but not global ones such as global warming.

Tourism is often an important local polluter. Its contribution to global pollution is smaller compared to other sector which pollute more such as the agriculture or part of the industry.
Questions to be asked

- Which forms take tourism induced local pollution?
- Why do we call catalysts “reparation machines”?
- What are the costs of reducing local pollution in the field of tourism?
- Is tourism a big global polluter?
- How does global pollution affect tourism?
The case:

Climate change as a challenge for world tourism

Co-Organiser of the 2nd International Conference on Climate Change and Tourism, UNWTO, UNEP, UNWMO, WEF, Davos, 1-3 October 2007 and co-author of the Declaration of Davos on tourism and climate change of UNWTO, October 2007
Possibilities and limits of environmental policies

4.4. Principles of environmental policies

Can the ecosystem be managed like a company?
Keywords

Blue planet

Hysteresis

General principle of environment protection

Carbon offsetting

Ecobalance
The view from the space:
The « blue planet »

Buzz Aldrin
Second man on the moon is now promoting Switzerland’s Tourism
The “blue planet”:
It cannot be managed like a company

The “Blue Planet” cannot be managed as a company. The closed system of the “Spaceship Earth” is too complex. Ecological processes cannot be forecasted. The nature often remains stable for a long time before changing often abruptly. Scientists speak in such a case of “hysteresis”.

Furthermore, the “time factor” which is the reaction to specific ecological measures is much longer in the field of the environment than in those of the economy and the state. Monitoring and evaluating ecological measures is a long term task.
Hystereses: a cognitive problem

The non-linearity of the ecological system implies abrupt transitions simultaneously accompanied by a behaviour of delay.

The system remains relatively stable for a long time and gives no cause for concern. It may however change suddenly, passing into a new state. It is not possible to control these abrupt transitions. Indeed they often occur without any anthropogenic influences.

This process, known as “hysterisis”, creates problem due to three forms of delay: the time required to recognise an ecological phenomenon, the time needed to act and the time it takes to see the results.
The long time horizon of environment protection: finding an equilibrium between short-term reactive measures and long-term preventive measures

Environment policy must create a balance between short-term reactive measures and long-term preventive measures. It must take into account both the costs of delay which increase with time and the cost of errors which decrease with time. The latter depend on ecological know-how.

The “time” factor varies in relation to the ecological, economic and policy processes involved. In terms of the environment, the time dimension extends from hundreds of years to thousands of years. The economic aspects are limited to the time it takes to depreciate capital goods (20 years maximum). Policy is determined in relation to the electoral horizons of the politicians.
The optimum for action: difficulty of achieving ecological balance on a global scale

Costs as a function of delay

Costs of delay as a function of conflicts of interests

Costs of errors as a function of know-how

Source: Fritsch, B., Les difficulté d’une politique écologique globale, NZZ, N° 190, 18 août 2001
Tourism causes waste and pollution but it also suffers from local and global environment problems.

It is not efficient to have a sector specific environment policy.

Tourism has to apply the overall principles of environmental policy.
The general principles of environment protection: no specific measures for individual sectors such as tourism

- Principle of general assessment of impacts
- Principle of prevention
- Principle of polluter pays
- Principle of co-operation

The principle of mitigation: Efficient use of energy reduces pollution and costs reductions

A pump takes out of the Lake of St. Moritz the heat of water at 4° for heating the Palace Hotel and is saving by this 430’000 litres of fuel a year.
The principle of ex posteriori adaptation: Snowmaking causes reparation costs which diminish profits

Number of French ski resorts with snowmaking equipment

Source: OECD 2007
The modern trade with indulgences: « Carbon offsetting »

Voluntary contribution to the reduction of emissions for flights, private cars, heating, events, enterprises…

Investment in projects to reduce GHG in the developing countries

Source: myclimate.org
The eco balance: Environmentally friendly behaviour is crucial

<table>
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<tr>
<th>Principles</th>
<th>Responsibilities</th>
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<tr>
<td>New ethic as visitor and resident</td>
<td>➢ Personal ecological balance</td>
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<tr>
<td>Management and marketing of the environment</td>
<td>➢ Internalisation of social/ecological costs</td>
</tr>
<tr>
<td>Sustainable development policy</td>
<td>➢ Reduction of hyper mobility, controlled growth</td>
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The “blue planet” cannot be managed like a public or a private organisation. The same is true for the local ecosystems. **It is difficult to decide in policy fields with different state of knowledge and time horizon.**

Tourism is an increasing polluter but it suffers also from environmental damages.

**Environment policy is part of the framework conditions of tourism policy.** It is not effective and efficient to have a sector specific environment policy.

It is nevertheless appropriate that environment policy take into account the needs of tourism. In the other side, **tourism players have the choice either contribute to reduce waste and pollution or adapt to the ecological framework conditions** by taking into account the costs of both strategies.
Questions to be asked

- Can we manage the planet earth like a firm?
- What is hysteresis for environmental policies?
- What is hysteresis?
- What do we understand by “waiting costs” and “costs of errors”?
- Why is the horizon for monitoring and evaluating environmental measures different from the horizons of economic and political measures?
- Why do we say that leisure tourism takes place in fragile landscapes?
- Why is tourism a global and local polluter at the same time?
How can the tourism sector contribute to manage its main resources such as space or landscapes?
Keywords

Carrying capacity

Visitors’ management

Landscape protection
Tourism need suitable spaces for building its facilities and landscapes for attracting visitors. **Suitable spaces for tourism and attractive landscapes are resources** which have an intrinsic value but **get only an economic value through their development**.

Not all spaces are suitable for tourism. Hills which are too steep or too flat for skiing cannot be developed. **Suitable spaces and attractive landscapes are getting scarcer** the more the resources are developed. Their use for tourism growth create negative externalities such as waste and pollution.
The notion of suitability of spaces for leisure sports use:
Only few of the 1’700 melting glaciers offer suitable surface for allowing summer ski and for making the winter season longer

Suitability of the terrain for skiing on glaciers

General Suitability
- Length in m
- Surface in ha
- Slope in %

Aptitude to make winter season longer
- Link with skiing area
- Difference in altitude

Suitability for summer skiing
- Crevasse
- Film

OFT Tourism (1978), Die naturräumliche Eignung der Gletscher für das Pistenskifahren
The notion of carrying capacity: physical planning vs. market forces

Carrying capacity is a physical planning concept which has as objective to find the **optimal growth**. The optimum is reached at the intersection of the positive and the negative externality curves.

**Externalities of growth can be positive or negative.** Positive externalities are mainly agglomeration advantages. The more a resort grows the more it can offer to the customer (Example: access by airport or motorway, shopping streets and sports centres). Negative externalities are mostly connected to waste and pollution (Example: traffic jam, noise, visual pollution).
The concept of carrying capacity: theoretically convincing but the implementation of the optimal size by is politically difficult.
The case:
Physical planning and visitors’ management at the UNESCO World Cultural Heritage Mont St-Michel (France)
Mount-St-Michell’s visitors’ management: The facts

- Mont-Saint-Michel: accessibility in form of a funnel « entonnoir »
Mont-Saint-Michel’ visitors management: The facts

Situation in April

A car parc which doesn’t fit to the needs of landscape protection and physical planning

Situation in August
Mont-Saint-Michel’ visitors’ management: The facts

Heavy traffic in the narrow streets during the peak periods with impacts on the quality of the visitors’ experience and its security.
Mont-Saint-Michel’ visitors management

Public services for managing the welcome equipment and the transport system
Mont-Saint-Michel’s visitors management: Solutions

Privileging the walk to Mount-St-Michel and constructing a shuttle on the bridge deck

Stop of the shuttle at the bridge to Mont-St-Michel

Walking path from the car parc
Mont-Saint-Michel’ visitors management: Solutions

View on the estuary mouth to Mount-St-Michel

Actual situation

Future situation
Landscape is not the same as nature, being nature reworked and civilised by the hand of man.

Landscape is a civilisation’s historic and cultural wealth.

The traditional landscape is part of the national heritage. It strengthens a people’s cultural identity.

Modern civilisation threatens the traditional but also modern landscape and destroys it in ways that are often irreversible. It loses its quality and its continuity.

Someone who goes jogging in a agro-industrial landscape may wonder why he or she soon becomes bored. The reason is quite simple: a landscape that has been emptied and rendered banal is tiring.
The problem of beauty of landscapes: the beauty of a given place depends on the perception of the residents and the visitors.

Visual pollution is the inter subjective acknowledgement of the destruction of a traditional landscape.

This notion is linked to the notion of the beauty of landscape in general, and in specific instances. Even if the way of conceiving this beauty differs from one individual to another, for a given landscape, there can be a consensus among individuals in rating the beauty of a site.

The beauty of a landscape can also be defined in negative terms, pointing to everything that makes it ugly. One author has personalised the problem by referring to certain tourism investors as “devourers of the landscape”.
The case: Farmer as the gardener of rural landscapes in the Schwarzenburgerland (Switzerland)

10 km from Berne
The case: The importance of architecture for the beauty of the landscapes, reconciliation of the past and the present in the tourism region of Grisons (Switzerland)
Chesa Futura, St. Moritz
1822 m.

Architect: Lord Norman Foster (Gherkin Tower London Swiss RE)
Top of Tyrol, Terrace above the Glacier of Stubai, Austria 3200m.

Architects: LAAC Innsbruck
Slow Horse Hotel, Dolomites, Italy
1301 m

Architects: Elastico, Asti, Italy
Ski-Jumping-Hill, Garmisch-Partenkirchen, Germany

Architects: Loenhart&Mayr, Munich
Wilderness has nothing to do with landscapes: it is pure nature and not nature worked by mankind.

Wilderness is nature at its original state without interference of mankind. Examples for wilderness are the High Alps, Patagonia in Argentina or Ténéré in Niger.

Wilderness can be a resource for “ecotourism” which is often not environmental friendly at all.

The question is if former landscapes which are abandoned can become tourism attractions and under which conditions. Abandoned landscape are rarely attractive since they are desolate, bleak or dead.
The new Monte Rosa Hut
the result of pioneering in design, technology and use of energy but it is not really sustainable

Winter
The Swiss Alpine Club manages a sort of a “hotel chain” in the Alpine wilderness at 2883 meters (9458 feet) near Zermatt.
Conclusions

Landscape is not the same as nature or wilderness. It is nature reworked and civilised by the hand of man. The beauty of a landscape depends on its perception by its viewers and their educational background.

Landscapes are a sort of cultural treasure of the past. It is possible through the concept of willingness to pay to estimate their value.

Landscapes are for many countries an essential resource for tourism. When unspoilt landscape become scarce they change from a free to a public good since they have to be protected.

Political decision making on landscape protection depends is made easier by cost-benefit-analysis.
Question to be asked

- What represents the suitable land and landscape for tourism economy?
- What do we mean by carrying capacity?
- What is the difference between landscapes and wilderness?
- Can we measure the beauty of landscapes?
The perpetual present

4.6. Satisfaction of the needs of the present without compromising those of the future generation

Can we contribute with our never satisfied needs to an ecologically responsible level of consumption without compromising the needs of future generation?
Keywords

Never satisfied needs
Consumption oriented identities
Eco-consumerism
Qualitative growth
The driver of economic growth in market economies: the never satisfied individual needs

Growth is the driver of the market economy. It depends on innovative entrepreneurship which introduces always new products for the market which are bought by consumers on the basis of never satisfied needs.

These needs are based on materialism with the assumption that the proliferation of always more and better goods and services increases the well-being and the quality of life.

Or, empirical studies by behaviourist showed when a certain level of wealth is reached, happiness is not correlated anymore with the possibility to buy and to possess more and more.

The worldwide triumph of market economy: huge new needs which are far from being satisfied

The market economy is today the economic system which has been implemented in almost the whole world. The globalisation of this economic system has created enormous material and immaterial needs in the poorer countries which will increase during the catching up process they undergo. The households of the upper and medium classes in the BRICS countries have the financial power to satisfy material and immaterial needs for their self-realisation.
The identity through consumption: consumption determines in modern Western societies the identity of individuals

The Western societies have rejected the idea of “sacrifice”. Individuals are not any more guided by collective principles of providers of identity such as the patriotic state, the religion or the local community. They live their own life in the present and not in the future. But life has become liquid or precarious, lived under conditions of constant uncertainty.

Under this condition, consumption has become in the perpetual present the dimension which provides identity. It is neither a need to be guaranteed (as for the classic economists) nor a satisfaction to be maximised (as for the neoclassics) or a possibility of distinction (Veblen). Under these circumstances, one cannot imagine individuals and communities to renounce to consumption and to return to principles which guided life in less complex and poorer societies.

The Brundtland report defined sustainable development as a development which should allow to satisfy the present needs without compromising (by waste and pollution) the needs of the future generations.

Eco-consumerism cannot solve the problems since hybrid cars or sophisticated public transport systems have often not the best eco-balance if the energy used for the production of the goods is taken into account.
The necessity of qualitative growth:
More of the same doesn’t increase the quality of life of residents and visitors

Qualitative growth = increase welfare with higher receipts and stable flows for reducing waste and pollution.
The immaterial side of tourism: tourism can lead to responsible consuming and behaviour

Tourism is oft criticised as a phenomenon of unsustainable consumerism which has a lot of negative externalities on the environment. It is supposed to use natural and cultural heritage just as a stage to produce standardised experiences based on clichés in the mindset of potential visitors.

In practice, it is up to the individual visitor to create his own travel experience. He can enlarge his horizon through travelling by respectful consumption of destination goods and related services. In this case, the visitor can contribute to the sustainable development of the visited place.

In the real world, tourism flows and receipts create a lot of positive externalities such as of a given place.
The never satisfied needs of consumers in market economies and the identity building role of consumption make the implementation of sustainable development difficult.

There are no incentives to renounce to consumption for reducing waste and pollution. In contrary, people will just replace their actual consumption into a sort of “eco-consumerism” which do often not lead to a better eco-balance.

In this context, tourism consumption cannot be considered as unsustainable consumption. It depends on the individual visitor if he wants to make his consumption responsible for the sake of the resident population and the visited environment.
Questions to be asked

- Why is it difficult to implement sustainable development in market economies?
- What do we understand by “eco-consumerism”?
- In which cases is respectful consumption of visitors sustainable?
- What are the positive externality of tourism expenditure for the development of destinations?
- Why does tourism contribute to maintain natural and cultural heritage?
The market driven way for a green economy

4.7. Application of market instrument to solve ecological problems

Can economic models contribute to the effective and efficient allocation of natural resources and the solution of ecological problems?
Keywords

Cowboy economics

Norms against taxes

Free good problem

Cost-benefit analysis
Scientists and politicians often forget to take into account the effectiveness and the efficiency of economic thinking

The case of the greenhouse gas

The scientists climate models are not based on forecasting but on scenarios. There are not precise enough to be used for fixing precise quantitative measures for reducing greenhouse gases.

These climate models do not take into account other causes of global warming such as massive population growth in Africa, poverty alleviation and the exhausting quantity of other resources as important as fosile energy such as oil, gas or coal. The amount of greenhouse gas reduction of 0.1 to 0.2. grade Celsius is to small for having any impact.

The atmosphere which should be protected is a classical worldwide common property. Its protection by the reduction of greenhouse gases can be implemented at any place of the world. It makes no sense to fix national goals. The gas should be reduced for it can be done the most effectively, efficient and at the lowest cost possible, not in Italy but in the Sahara.
The decision on a upper limit of GHG pollution and the emission of certificates which can be bought or sold on the market would be a better instrument to contribute to the solution of the problem.

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It makes no sense to fix norms or to subsidize protection measure. The best thing would be to fix an upper limit of greenhouse gas pollution and introduce a system of certificates which are traded on the market. Those who pollute pay, those who reduce pollution are remunerated.
The way to overcome « Cowboy economics »: eco-effectiveness and not only eco-efficiency

The ecological cycle should be integrated in the economic cycle

Produced goods and services

Households → Entreprises

Waste

Pollution

Eco system


The natural resources are rare inputs, their use as free goods is the basic reason for waste. The production of litter produces pollution which is harming health, reducing the utility of the resources and increasing their costs.
Tourism depends on resources such as **suitable land for leisure activities or attractive settlements and landscapes** which should be maintained unimpaired for a long use.

There are **externalities in the allocation process of resources** which throw a doubt on the efficiency of the decentralised market forces. If the neoclassical assumption is taken into account, **the private marginal profits of a producer shrink the more he produces.** At the same time **the marginal costs of the collectivity are increasing.**

There is **no equilibrium between the private and the collective optimum.** Welfare economists speak in such a case of market failures or inadequacies which must be overcome.
The negative externalities of waste of land and pollution of scarce spatial and landscape resources: the market economy can solve it only partially

Decreasing marginal profits/losses in EUR

\[ AOBD = 600 \times \frac{(100+60)}{2} = 48'000 \text{ EUR} \]
\[ A0C = \frac{100 \times 1000}{2} = 50'000 \text{ EUR} \]
Market solution or state intervention: Taxes or “rights to pollute” or norms

The market is in general efficient for allocating rare resources but cannot avoid negative externalities such as waste and pollution. There are two opinions about the way to minimize these externalities.

The **neoclassic economists** for whom a state intervention is too risky because of governmental failures, proposed **taxes for polluters** corresponding to the difference between private and collective costs (Pigou tax) or the payment of **“rights to pollute”** which can be traded on the market (R. Coase).

The **social philosopher** speak of the moral limits of the market. **They propose regulations by the state.** For them the trade of rights to pollute is a sort of modern form of the medieval sales of indulgences.
The optimal level for regulating by taxes or norms the marginal costs of reduction for the producer are nil at the initial stage.
The regulator fixes the norm or the tax: a level of emission which is acceptable for the producer and which is reducing the collective cost significantly.

The marginal costs are quasi nil at the level of the initial pollution (120kt/year). It is easy and cheap to start to reduce the pollution at the initial stage.

When the regulating state ask for a higher reduction, the costs increase and reach the maximum for an emission level of 0. This is not acceptable for the producer but it would lead to 0 pollution. The efficient level of pollution is 60kt/year. Above this level, the amount of emission would cause to high public damages.

If the state chooses the instrument of price, it would fix the efficient tax at 30 EUR/kt. If the state chooses the instrument of the reduction of the quantity of the emission, it would limit the quantity of emissions to 60kt by a norm.
A green space or urban and rural landscapes can be more or less scarce. If the demand for construction land is inexistent, **landscapes are free goods**. In this case, they have no price at all.

If there is a strong demand for developing the land and a important demand for non developed land, **landscape could get a price**. This is the case when an individual or an organisation is buying land for protecting it. In this case, landscapes are **private goods**.

If the demand is for developing land is much higher than the demand for protecting it, an intervention of the state is needed when the landscapes should be protected. In this case, landscape are **public goods**.

In practice, land is often owned by private people but the state or third parties pay for protecting the land. In this case, landscapes are **mixed goods**.
A good is public when nobody can be excluded from the consumption and when nobody would produce it.

<table>
<thead>
<tr>
<th>Principle of rivalry</th>
<th>Principle of exclusion is applied</th>
<th>Principle of exclusion is not applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rivalry between goods at the moment of consumption</td>
<td>Private goods</td>
<td>Honey moon suite in a hotel</td>
</tr>
<tr>
<td>2. Partial rivalry of goods</td>
<td>Mixte goods</td>
<td>Breeding of cows and skiing on a alpine meadow</td>
</tr>
<tr>
<td>3. Non rivalry between goods</td>
<td>Public goods</td>
<td>Utilisation of car tag on a motorway under conditions of fluent traffic</td>
</tr>
</tbody>
</table>
Landscape as a free good: when the demand for developed and for non developed land don’t meet there is no price and landscape is a free good

Solution without building of an equilibrium price: free good

\[ p \]
\[ \text{Developed land} \]
\[ p \]
\[ \text{Non developed land} \]

Explained

Abscissa, ordinates and demand see previous page

Since the demands don’t intersect, there is no rivalry for developing or using the territory. In fact, the territory between C and D is not exploited. The price mechanism is not needed since the territorial resources have the character of a free good.

With a price of zero, the developed territory is represented by the straight line AC, the non developed or used territory is the straight line DB and the straight line CD stands for the non used territory.
The market solution:
the price is determined at the point of equilibrium where the curve of used and non used land meet.

Solution with building of a price under equilibrium conditions

Explications
Abscissae: the territory from A to B is not yet developed or used.
Left ordinate: Willingness to pay for the developed territory.
Right ordinate: Willingness to pay for the non developed territory.

Equilibrium: Intersection of the two straight lines of demand gives the point of the marginal utility for the two ways to use the territory.

A à C* => developed territory in a situation of equilibrium
C* à B => non developed territory in equilibrium
P* => Price for the situation of equilibrium
Landscape as public good: when demand for developed land is strong non used land will be developed and there is a pressure against landscape protection

Solution with strong demand for land to develop

Explications
The demand for developed land dominates the demand for non spoilt land. The willingness to pay for the last unit of a given developed territory is higher (E) than the price for the land the group for protecting the landscape is willing to pay for the first unit of land to be protected (F). In such a case, the whole territory will be developed or used.
Willingness to pay of consumers: the concept for estimating the value of a landscape by flows and receipts
The willingness to pay for landscape: creates hedonic receipts

<table>
<thead>
<tr>
<th>Visitors</th>
<th>Willingness to pay for landscape</th>
<th>Willingness to pay in CHF</th>
<th>Benefit from landscape p.a. in CHF/million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal tourism</td>
<td>5.2 million</td>
<td>76 %</td>
<td>400.- / year</td>
</tr>
<tr>
<td>International excursionists</td>
<td>ca. 50 million</td>
<td>83 %</td>
<td>12.50 / day</td>
</tr>
<tr>
<td>International overights</td>
<td>7.4 million</td>
<td>83 %</td>
<td>12.50 / day</td>
</tr>
<tr>
<td>Total benefits from landscape per year</td>
<td></td>
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</tbody>
</table>
The value of the landscape: corresponds to the sum of the annual receipts divided by the interest rates for secure bonds

The willingness to pay (WP) is the basic concept for calculating the value of the production factor « landscape ».

The experts capitalise this willingness to pay like a perpetual annuity of the nature.

If one takes into account that potential alternative investments reflect the opportunity costs of nature/tourism (for example leisure parks), the capital costs can be used as interest rates (r).

The return from the obligations of Swiss Confederation (3,5%) constitute the lower limit of the capital costs.

\[
\text{Value of the landscape} = \frac{\sum WP}{r} = \frac{\text{CHF 2.5 billions}}{0.035}
\]

71 billions Swiss francs
Cost-benefits considerations:
basics for a policy of landscape protection

Estimation by quantification of the costs and benefits of nature and landscape is necessary. Non polluted landscapes are threatened and disappear. They are today scarce or rare goods.

The state has to pay the costs of the protection of the landscape. The population and the economy also have to contribute financially to the protection of the landscape. They have to pay the implicit costs of the regulation which are necessary to protect landscapes.

The owners of land have to give up possible investments and profits. The economy has to accept restrictions or fulfil conditions which increases the costs of production.
Conclusions

Economic thinking increases the effectiveness and the efficiency of measures against waste and pollution.

Taxes can better solve conflicts between the commercial use of resources and the protection.

The notion of carrying capacity fixes the optimum between growth and protection which can only be reached when physical planning takes into account the market forces.

Landscapes are scarce resources which change more and more from a free to a public good.

There is willingness to pay for protected landscapes allows to calculate a hedonic price of landscapes resources.
Question to be asked

- What represents the suitable land and landscape for tourism economy?
- Is landscape a free, a public or mixte good?
- How can negative externalities been be reduced in market economies?
- What do we understand by carrying capacities?
- What do we understand by landscapes?
- How can we calculate the value of landscapes?
Reader


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