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Introduction

In the last decades, ecological research has registered great progress. It took long enough until the importance of this much neglected field of research dawned on the industrial nations of the west; by now, occidental scientists may proudly point to their insights. Dealing with resources, energy balance and sustainable climate protection have emerged as subjects of public interest. "Energy efficiency" has become a new key concept. Different to years before, it no longer involves an optimum power output (in terms of products or the "efficiency factor" of technical installations), but processes and procedures, in order to achieve a particular benefit with the lowest possible consumption of energy and material.

In non-European areas the increasing desertification and deforestation has been a subject of discussion in development aid and ecological research, resulting in an expansion in costly projects.[1]

Indigenous capacities and concepts, however, have seldom played more than marginal roles in this research, because our part of the world believes to be in the possession of effective scientific knowledge. This paper addresses the question of how mountain farmers in south-west Ethiopia deal with the energy resources that are available to them.

Focussed are Omotic-speaking and Cushitic-speaking communities, mainly those of the latter with polycephalous social structures and an economical basis on intensified permanent cultivation, have transformed their habitat largely into a cultural landscape.[2] The main objective of their economic activities is to cover and secure their subsistence. There are indeed surplusses for the market and the exchange with adjacent groups, but these are not the economic aim. Until recent times, apart from artisans there were no social classes within these societies the farmers had to provide for specifically.

[1] The UN is also concerned with this problem; cf. *United Nations Convention to Combat Desertification*.

[2] In the following, mention is made of, among others, the Burği, Diraaša, Dizi, Dime, Dullay-speaking groups, Konso, and Aari. Administratively they currently belong to the *Southern Nations, Nationalities and Peoples' Regional State* (SNNPRS).

Social conditions were somewhat different among several of the formerly centralised societies of the Omotic linguistic group (e.g. Käfa) mentioned below.[3]

Morphologically south-western Ethiopia is a broadly rifted zone with uplifted dome regions. (The altitude differs from 400 up to 3,500 m). In the mountains, the volcanic soil is naturally fertile, although the rain which falls in two seasons each year (in the southern part) is irregular and unreliable.[4] The minimum precipitation is around 500 mm whereas the maximum is around 1,500 mm.[5] Generally speaking, the rainfall also correlates with the altitude. The different altitudinal zones constitute respective climatic zones which are used to differentiate agricultural and economic ends by the population. In hilly and mountain areas the population density is very high (150–500 per km²),[6] but much less in the dryer lowlands, which is the habitat of mobile pastoralists.

Cultural landscape

An external observer may wonder why the local cultural landscapes have not become steppe-like, in spite of dense settling and perennial tillage. They even show a park-like character, an impression created by numerous wild trees and bushes growing in the fields and around their perimeters.

For Africa this is a rare sight. Does it not indicate to the observer a special kind of human care of the environment?

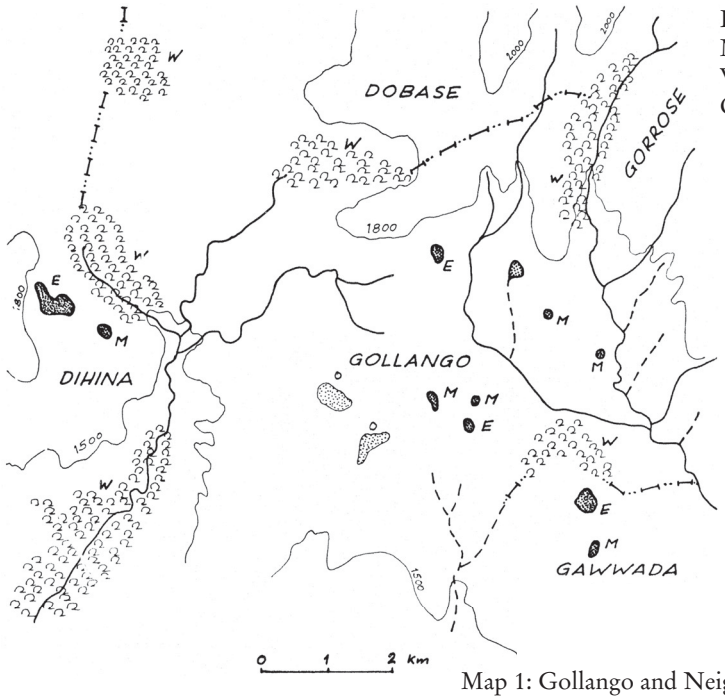
[3] My own ethnological research and exploration trips in south-western Ethiopia and the north of Kenya cover the period from 1973 to 2009, i.e. during the Imperial Era, the regime of the Därg and the contemporary government. My regional focus was on the Burği-Konso cluster among which I rate, besides the name-giving ethnic groups, the Diraaša, the Mossia, and the Dullay-speaking ethnicities (briefly called Dullay in the following). On several short exploration trips I visited most of the groups mentioned here. I want to thank the many persons who gave me, with much patience, insights into their ways of living, in particular those with whom I am still in contact.

When it comes to statistical data on ecological and especially energetical issues, I rely on my own observations and impressions as former energy consultant of the *Verein Deutscher Ingenieure* (VDI). Statistical data, especially that collected in the so-called "periphery", are in the given circumstances inevitably incomplete and often fell under political calculation. (The reader can believe me that I have made my experiences with the manipulation of statistical data during the respective governments.)

[4] Two rainy seasons are approximately south of 6° north latitude.

[5] There is more rain in Käfa highland (over 2,000 mm). But Käfa is not in the focus of my article.

[6] *Central Statistic Agency of Ethiopia*: *www.csa.gov.et* 2011. Since census data always refer to the whole area of a *wäräda*, uninhabited lowlands and mountain-pastures included, an average density of 400 per km² in the main settlement zone (1,500 m to 2,100 m) is realistic.



Map 1: Gollango and Neighbours (Dullay)

We are aware of the counter-example: in many of the fertile parts of northern Ethiopia, nearly all the natural vegetation has given way to the plough.

My paper focuses on the conceptions and methods which underlie the obvious wish of the inhabitants to preserve their habitat in south-west Ethiopia.

I first want to make the following proposition: The decisive factor in this case is a worldview and a value-system that are embodied in generation-group and lineage systems. They place man in a context of space and time that goes beyond his own lifetime and provides a link to past and future generations, and also to cosmic events. This implies an ethics which, *inter alia*, finds its expression in the soul conception (Amborn 2002). This also includes flora and fauna.[7] Therefore it is part of man's responsibility to guarantee, through the preservation of his habitat, the existence of all living creatures who will come after him.

Undoubtedly, the attention of scholars has been directed above all toward the sphere of agriculture. People practice an intensive farming system based on permanent cultivation, which requires labour-intensive techniques to maintain field-terraces, irrigation systems and soil fertility. Most of the labour is carried out by working groups. Traditionally the main crops are cereals,

[7] Among other things, this notion finds expression in the obligation to hold the second funeral rites also for lions, just as for deceased persons, one year *post mortem*.

and above 1,800 m A.S.L., *ənsät* (*Ensete ventricosum*), a crop of unique yield. Balanced cattle-raising is combined with these agrarian measures. However, the agricultural methods, which have been well documented are only marginally elaborated in this paper.[8] Instead my interest is to examine the careful use of non-cultivated resources, primarily energy resources, that are thermal energy carriers, meaning chiefly plant-based materials like wood.

Analytically, we can distinguish between energy resources and energy use, and at the same time we can compare the sphere of human influence with those domains that are scarcely affected by human activities.

This means coming close to a culture/nature dichotomy, the debate on this topic was carried out especially in the 1990s but will not be focused here. Western concepts have rightly been relativized, with an emphasis on the prevailing cultural and temporal restrictedness of the concept of nature.

Thus, in this paper, the term nature means the sphere in which man has no deliberate, or only very limited influence, on the growth of plants and animals.

The organization of the habitat and resource management

Comparative ethnological studies show that human societies vary greatly in the way they organize their habitats. The agrarian peoples of southwest Ethiopia usually divide their geographical environment into three zones:

1) land cultivated by man, including settlement areas;
2) wilderness; and
3) a locally specially defined intermediate space which includes, for example, rocky peaks as well as sacred places (Amborn 1987: 380).

In general, the term wilderness describes those areas where there are no humans, or human society, in other words the non-social space.

In the Dullay-speaking area, for example, the concept of wilderness is expressed by the verbal noun *pata*, which also has the meaning of "losing one's social ties" and, by derivation, "disappearing".[9]

For Konso, Elise Demeulenaere (2003: 82; 2005: 166) has made a model analysis of the different zones. First, the Konso themselves define the duality of cultivated land associated with domestication and security, that is opposed to peripherical lowlands (*kommeeyta*) an area of wildness and danger. Then there is the distinction of woodland (*mura*) and land covered by bush-

[8] For example: Amborn 1989; 2009: chap. III.1; Demeulenaere 2005; Straube 1967; Sutton 1989; Watson 2009; Widgren – Sutton 2004.

[9] It would be wrong then to identify *pata* with our concept of nature, also because the wild fauna would not be labeled in such a way, even though wild animals live in the *pata*. As a term for dense woodland *pata* is used seldom if used at all [wood = Du: *hooro*].

es and shrubs. The latter is potential or formerly cultivated land, while *mura* is excluded from any agricultural use.[10]

In boundary areas between ethnic territories, strips of wilderness are often deliberately left in their original state. These frontier areas symbolise the boundary of the realm of culture and are considered to belong to the wilderness already. They are chosen as grounds for ceremonial hunts. In South Burği the cultivated area is enclosed and spiritually protected by a ring of holy places, each marked by a sign called *esa* demonstrating the sacredness of the place (Amborn 2009: 266).[11] Aside from other parts of the Burği-Konso cluster we have comparable accounts from the Käfa, the Dime and the Añwaa, for example.[12]

Ecologically, it is interesting that there is a distinct richness of plant species in all of the three zones, and that the total number of species remains nearly constant in each zone, though the proportion of crop plants and uncultivated flora differs.[13] There are trees of many different species, hedges line the margins of fields, groups of trees shadow ponds, and sacred groves and holy forests can be seen. Here, the biological complexity of an uninfluenced – "natural" – ecosystem has been changed to a great extent by man and replaced by an artificial ecosystem which, in its range of variation, simulates the "natural" ecosystem.[14] In addition to other measures, this can be achieved through mixed cropping and the controlled toleration of weeds that are allowed to grow up to a height of about 15 cm. This strategy helps steer pests away from freshly planted seeds. It also maintains soil quality, reducing the soil dryness, and prevents erosion (cf. Altieri 1981). Finally, the diffusion of wild herbaceous plants used as ash fertilizer on fallow fields is ensured.

If there was such a well-functioning ecological system in the densely populated highlands over generations, this leads to think that the people

[10] Three types of *mura* can be distinguished. Two of them are for commoners forbidden to enter (*dawra*), while the third one (*dina*) is planted around the walled cities. But even there it is forbidden to take firewood (DEMEULENAERE 2003: 82; 2005, partie IV).

[11] Even though the Burği are mostly Muslims today, they still carefully maintain the *esa* signs.

[12] Käfa: BIEBER 1920, I: 130; Dime: HABERLAND 1959: 227; cf. also KURIMOTO 1996: 34 on the Añwaa (Anuak): "[…] *wok* (literally meaning 'outside') is savanna woodland". But there are now villages there.

[13] For economic security, as well as for climatic, ecologic and religious reasons the range of cultivated plants in the Burği-Konso cluster is extraordinarily wide. For the Burği, Helmut STRAUBE has documented this diversity extensively (in: AMBORN 2009: 58–75). The most comprehensive study of a given flora can be found in DEMEULENAERE (2005). Taking the example of Konso, she shows a great diversity of species. She also analyses the social control of woods and bush in Konso.

[14] Already in the 1960s Murdock has analyzed such systems in the pacific islands (MURDOCK 1963: 150).

knew how to treat their environment. With regard to tilling the soil, it is easy to see that there was careful planning, since there are rules for irrigating, crop rotation, mixing of seeds, different cultivation methods according to altitude, fertilization, etc. (cf. fn. 8). Likewise, it is these factors invested in the land – and not merely physical conditions - that allowed a population density exceeding 200 people per km².[15]

Less obvious for the external observer is the control (economic, social and religious) of a flora and fauna that does not directly serve as human food.

Even so, one can begin with the observation that in the cultivated zone healthy trees are not allowed to be cut down. Instead, there is a controlled cutting out of dry branches. Green branches are only occasionally cut, and the leaves are fed to animals or raked under as green manure in the fields. Such trees are planted and give an impressive picture of "forest farming".

In the zone of cultivation, the person who owns the land upon which certain trees stand, is also responsible for them. His family has the right of use. If a tree is destroyed, the owner of the field will, as a rule, be called to account by his lineage or territorial organization.

Distinctive features of the landscape are the holy forests of the lineage heads (Konso: *mura poqalla*; Dullay: *elme*) and the sacred places used, among other things, for rain rituals and initiation ceremonies. On these *moore* places of the Dullay, the contrast and the dialectics of culture and untouched landscape become especially clear. In primeval times, the ancestors erected monoliths in the wilderness. These places with the man-made monoliths, left as they were since "the dawn of time", are considered the places where human culture, especially social order, originated from. Each time social peace is disturbed, these areas serve as the ceremonial scene for the reparation of the human and the cosmic order (Amborn 1997: 383ff.).

The more extensive holy forests contain the grave sites of lineage heads. These Konso hilltop forests extend to some 15 hectares. Stands of juniper, stems erected on the ceremonial place (*mooraa*) during the transitory feasts of the *gadaa* system, demarcate special areas within the forests (far from the graves). These stems (*olahitta*) symbolise the newly promoted generation set.[16] For the construction of the men's house in the public places (*mooraa*) of the towns (*paleeta*), at last one part of the building timber must come from a *mura poqalla* (Demeulenaere 2005: 360ff.). After cutting a tree, the lineage head (*poqalla*) has to plant a new one. Such timber must not be used for profane purposes. The *mura dawra* constitute another restricted area in Konso.

[15] For the discussion questioning the conditions and reasons why in some rural parts in Africa one can find a densely population rate and in others not, despite nearly similar environmental conditions; cf. WIGDREN 2004: 2ff., 11ff; WATSON 2009: 43ff.

[16] For the generation-group system (*gadaa*) of the Konso see HALLPIKE 2008, chap. VIII.

These are considered as virgin natural areas. There it is not only forbidden to remove any wood, but also to plant anything (Demeulenaere 2005: 404).

Finally, there are forested areas around lakes fed by springs from which the first ancestors emerged.[17] In these places, man may not change anything. Frequently, not even branches or twigs may be snapped there. Consequently, remnants of the original mountain rainforest have been preserved in the midst of the cultural landscape (for the northern part of Gollango, see map).

Due to these manifold restrictions, the search for firewood is mainly conducted in the wilderness beyond the settlement area. Yet even here, people may not help themselves freely. Only dead trees or boughs may be taken, so not to endanger the resources. Nobody would think of cutting healthy trees solely for their high heating value. To the horror of the indigenous population, exactly this was done by the North Ethiopians who had been resettled in the south by the *Därg* regime's Resettlement Programme (*säfara*) (see below note 29). In numerous places, complete riparian forests became vicstim of deforestation.

Wood may be cut, however, for the purpose of house-building and the making of implements. In some cases, it is necessary to ask the elders before setting out for the lowland which is abundant in timber. In addition, only certain trees may be cut down, even in the wilderness.

When I walked through the bushland with some knowledgeable men, they told me about nearly every plant and how it was used in certain ceremonies or healing rituals. It can be very dangerous if such herbs are not used exclusively for the prescribed ritual purpose.[18]

We can thus assume a certain ecological foresight. If the cutting of wood in such regions is forbidden, certainly it is **also** connected with a long experience in the interaction of tree growth, tree population and hydrological balance.[19]

Based on this assumption, we may draw the following conclusion for these ethnic groups, especially for the Burği-Konso cluster: It is obvious that they have developed long-term strategies which allow them to live in a meaningful symbiosis with their environment. They extract the necessary

[17] There is an impressive example, rich in details, of the mythical birth of a Burgĭ lineage founder out of a pond surrounded by forest in KELLNER (2007: 173).

[18] I observed first how carefully people handle the wood reserves in the Sagan River valley south of Konso. It is difficult for me to understand how a population of about 100,000 can support themselves with fuel from strips of wood and bush measuring scarcely 20 km in length and 2–5 km in depth. It is surely not awe of the grandeur of nature which imposes caution.

[19] Some of my collocutors in Diraaša registered a correlation of deforestation, eucalyptus plantations and the decrease of water in mountain streams. Roland MISCHUNG (1980: 144ff.) mentions an Asian parallel to this. The Karen of Thailand told him clearly that in consequence of tree-cutting they apprehended the drying up of brooks which are indispensable for the irrigation of fields.

energy resources from it without destructive interventions, while preserving or even increasing the productiveness of the cultivated land. Practical knowledge about the vulnerability of this symbiotic system, as well as extreme sedentariness, have contributed to this practice, which includes responsibility for future generations. It is not merely an environmental adaptation, but rather the result of a chain of purposeful cultural activities.

This can be demonstrated by considering the reverse situation. When the social and religious impediments disappear, as has frequently happened in the upheavals from the early 20th century on, over-exploitation sets in and within no time the same region sinks into poverty or even becomes uninhabitable.[20]

Energy efficiency

Our consideration of energy problems would be incomplete without taking a look at how the resources are transformed into energy.

In the face of worldwide steppization, the industrial nations urgently look for strategies how to counter the energy problems in the Third World. The magic word here is appropriate technology. A whole string of well-meant suggestions have been worked out and they do not have the destructive effects of large-scale projects. But what can be understood by appropriate technology? As a rule, it turns out to be merely a simplification of big technology, a reduction which is awkwardly reminiscent of an adult who wants to piece together technical toys suitable for children. It can be assumed that a simplified version of our technology will suffice for the so-called underdeveloped people. But for the African farmer a simplified model, say, of the multi-sailed windmill – once indigenous to Greece – is as strange as electronically controlled wind wheels. And even a German stove recreated in clay is not suitable for a traditional African house.[21] The transfer of technology proceeds one way from north to south. To build on the technical knowledge of the ancestors still existing in some places is not so interesting, because we own the superlative technology and we are supposed to transfer it. Already in the early 1920s the German ethnologist Karl Weule (e.g., 1921), in the then widely popular *Kosmos* booklets, called attention to examples of elaborated indigenous chemical and physical technologies.

Did the ethnic groups – those mentioned here – find ways and means of utilizing their energy sources economically and effectively?

[20] This is a process especially looming on the southern margin of the Sahel zone. In southern Ethiopia it has already been completed at the north-western end of Lake Abbayya in a strip of full desert showing only tedious regeneration. See also below.

[21] Even transportable parabolic reflectors for the heating of cooking pots are not very suitable. What housewife would like to cook in the blazing sun outside the house?

Thermal energy is chiefly required for the preparation of food and for heating. It is well known that it can get extremely cold in the highlands during the night. Even though temperatures are only seldom below zero, you have to reckon with the "chill factor" (attributable to humidity and wind) that creates the impression of lower degrees. Open fires are common. Traditionally, there are no stoves or walled-up hearths, which doubtlessly use fuel more efficiently. But the fireplace is often surrounded with a stone or mud wall. On one side of the fireplace, the Konso place a stone slab, about 50 cm high, in order to store the heat and radiate it. Pot racks, each consisting of three hollow clay cylinders, have become few and far between: these always had hot water in store without the necessity of specially heating it.[22]

In southern Ethiopia, hot meals are prepared only in the evening, in order to use the energy of the fire for both cooking and heating. In the daytime the embers are covered with ash to be rekindled in the evening. Unfailingly, firewood is handled carefully. For example, the women build star fires that can be well adjusted to the cooking.

But embers, apart from giving off heat, serve another purpose. Here it is the open fire which is of particular use, because it keeps away vermin, so that a house built in the traditional style is nearly free of flies. More important for the residents is that the smoke preserves the seeds stored in the housetop against damage by insects. Nobody would think of storing seeds in a room that is temporarily unoccupied. A hearth made of clay, as recommended by development experts, requires a chimney, has only limited advantages and specific disadvantages. Another property should be mentioned. In the *ənsät*-growing areas of southern Ethiopia it is common to store hacked up parts of the shrub in fermentation pits. A few days later, the hard parts have been softened in the pit and do not require long cooking times anymore.

As for the heating of the living area within the houses, the structural design of the house has a decisive influence on energy consumption and energy effiency.[23] In Germany, only in the last years the construction of energy-saving buildings, building insulation and the development of corresponding building materials has become a topic, and has increasingly gained in importance since the withdrawal from atomic energy has been decided.

In southern Ethiopia, the advantages of the low thermal conductivity of air are used in many architectural variants, most often in the form of double-walled constructions (incidentally an idea that has only now been taken up in the West).

[22] We also know such water basins from our old cooking stoves in Europe.

[23] In this respect, human inventiveness is amazingly rich on a global scale. See, for example, the low-bedded entranceways of Inuit igloos – as warm air rises with the otherwise extremely low thermal conductivity of air, it can be ensured, that even without doors, no cold air gets into the houses – or the sunken houses that use geothermal energy and are known not only from North American Indians.

In the chilly Käfa highlands, the wettest region in the whole of East Africa, double-walled houses have always been the rule.[24] The basic form has a low outside wall and, corresponding to the roof pitch, a higher inside wall. In the space between, there is room for storage and reception, and stabling as well. In Maale, two interesting examples of energy-efficient houses have been found. One type has the inside wall built up only so high that an open space is left between the wall and the roof, so that the room is well-aerated and draught-free, also due to an entrance that opens well above ground-level (Jensen 1959: 303 fig. 6.2). The other type has a round and walled sleeping chamber placed in the centre of the house on a circular base, approximately one metre high (Jensen 1959: 304 fig. 6.3). Thus, the heat rising from the embers of the fireplace can be made use of and besides, insects can be kept away.

With the neighbouring Baka and Banna, houses are described (Jensen 1959: 88, 348 figs. 9.2, 10.6) where the roof overhangs the wall and reaches the ground. Like in Käfa, the space between these two "walls" is an additional storing place (*ibid.*: 88). Braukämper (1983, fig. 2) shows a similar construction from the Kambaata. The residents pointed out to the ethnologist that a comfortable inroom climate was prevalent in such types of buildings (*hugumma*) [personal information by Ulrich Braukämper]. Nowadays, this is featured likewise in modern energy-saving houses in Europe ("passive house"). In the Gamu highlands, where it gets very cold, thermal insulation of the local beehive-shaped houses is achieved through a double layering of the roof. First, a layer of bamboo shingles (allowing space for air pockets) is fixed in place. This is then covered with straw reaching down to the ground (Straube 1963, fig. 4). Any of the traditional houses of the southwestern highland population are solidly built dwellings. This also refers to the houses in the Sidaama highlands which are almost totally constructed of bamboo sheets. They differ a lot from the often carelessly erected houses of the *tukul type* of the northerners. The well-constructed traditional circular house with a thick thatched roof I lived in Gollango (Dullay) had no double wall but a wall built by boards that were approximately 10 cm thick. Even here the temperature within the house was constantly between +21° ±3° C while outside temperatures varied from 15° to 32° C.

With regard to energy use, the regulations based on technical, social and religious competence are not as well articulated as in the context of energy provision. But energy provision and energy utilization combine in a close-knit complex. Where natural resources are controlled by society, it is in everyone's interest, not only in the interest of the individual, to deal thoughtfully with the use of energy.

[24] See BIEBER (1920: 188ff.) for numerous examples of this way to build.

A negative example may illustrate this: with the growing transformation and destabilization of their own cultural value system, the corporative control of energy resources in large parts of south-west Ethiopia was weakened as well. This, in turn, caused the neglect of energy-efficient measures in the domestic sphere. For example in the Dullay area, pot racks used as hot-water containers have virtually disappeared. There is no longer a hearth surrounded by big stones in every house, and at night a nasty wind blows through many of the carelessly built houses – apart from the fact that the inappropriate corrugated iron roof is gaining ground.

Within ribbon-built villages, one will seldom find traditional architecture, but many hastily built rectangular houses with corrugated iron roofs: hot during a sunny day and cold at night and in the rainy season.

Technical knowledge of complex processes such as energy management is in danger of becoming lost. If this knowledge, which includes the relationship with the environment, is lost, then the introduction of more effective technologies will be of no avail, since there will be no technical or social reference points. The problems relating to providing and utilizing energy resources are not merely of a technical, but also of a cultural kind, and can only be understood interdependently.

Another conclusion can be drawn from the above considerations. Under certain external conditions, people develop effective processes. Knowledge of these processes becomes lost in the course of modern developments. Instead of examining their benefits, they are mostly assumed to be backward. For reaching comparable effects, one has to apply elaborate and expensive technology in our days.

Efforts of industrial countries as compared with agrarian societies

Let us consider the energy balance between industrial countries and the mentioned agrarian societies:

In order to tap resources, industrial countries have to make huge technical efforts, which as a rule, are not without destructive consequences. To obtain wood, for example, broad swathes have to be cut through the forest. Undergrowth and branches are left behind as waste wood. In turn, human and mechanical energy is required for regeneration (afforestation and growth control). Measured against the energy input and energy yield, efficiency is low, in view of the high losses. Access to energy resources depends on the market-based standards prevailing at the time. Furthermore, it is regulated by property relations and forestry considerations.

But efficiency is high on the *side of energy utilization* thanks to sophisticated equipment. However, it has to be remembered that the production of technical appliances also requires a substantial expenditure of energy and resources.

Let us compare this with the situation in rural societies: there, energy resources are fully utilized. Branches, leaves or bark are not thrown away unused. Accordingly, the efficiency on the *side of resources* is extraordinarily high. There is, however, relatively low efficiency caused by high radiation losses (in open fire places) on the *using side*. But there is no expenditure of energy required by technical appliances and likewise no energy is necessary for the regeneration of forests and bushland. Traditionally, access to the resources is not money-based but regulated by social activities. *Waldsterben*, or destruction of forests, as a consequence of environmental pollution and monocultural forestation, does not occur.

Is it not remarkable that regarding energy efficiency human thought and praxis in an "underdeveloped" country is more modern than in the western world where these ideas have gained acceptance only recently?

One might ask whether these people developed a kind of ecological awareness. The answer would be no, if the question implies that the mentality is parallel to western views about ecological problems. Yet, besides their remarkable knowledge, these ethnic groups show sensitive behaviour with respect to their habitat.

But there is no way to romanticize these groups with a Mother Earth ideology in mind: they are simply not suitable for a modernized version of the "noble savage". Nevertheless, the entire environment is an integral whole, without distinguishing between the economic, the social and the religious levels.

Such holistic thoughts find expression in the duality of wilderness and cultivated areas which is also to be understood as a dialectical relationship. The wilderness, as we said in the beginning, lies beyond the human sphere, but at the same time is believed to be the realm where human culture and its organization originated. A symbolic role is played here by the sacred places. They show a multi-layered space-time dimension, which does not limit time of action and place of action only to the here and now, but also constitutes past, present and future on the temporal axis as a virtual continuum. The specific temporal depth of a place develops from the constant ritual repetition of an event that occurred there: from this *repetitio ad infinitum* the repetition also impinges on the future, establishing and at the same time confirming its significance (Amborn 1997: 283).

In this connection there is the already mentioned idea of man as part of a quasi organic link between the not-yet-born, the living and the formerly living, who have become ancestors. Ethical action and moral values are always defined in relation to this triad.[25]

[25] As BUJO (2000, chapter II) explains, this kind of thinking opens up large room for manoeuvre that always requires new decisions and does not allow any convenient retreat to traditions.

The ingenious indigenous system under stress

The areas mentioned here are regarded as periphery of the Ethiopian state, nonetheless they are narrowly interlocked with the political and economic processes in northern Ethiopia. The most incisive and effective event in the more recent history was the conquest of what is now South Ethiopia by Imperial Abyssinian troops at the turn of the 20th century which involved enormous casualties (c.f. Donham – James 1986). These were at first due to direct combat, but were then followed by epidemics and famine (Braukämper 1975) and finally, well into the 1920s, by eviction and enslavement.

Although subjection of the southern peoples was completed around the turn of the century, the time up to the 1920s may be described as a frontier situation. During this phase, military outposts were established. The largest garrisons were located in Diraaša land on Mt. Gardulla and in Čenča. The great losses on the side of the indigenous population, together with the increasing demand by the conquerors for compulsory labour (*gäbbar*), had a serious effect on local economic and social structures.

In the 1950s, according to Haberland (1959: 235) there was, for example, only a fifth of the original population left in Dime. The Dizi living on the utmost south-western promontory of the Ethiopian highland were hit at least just as hard. Haberland (1993: 11ff., 187.) draws a harrowing picture of destruction and demoralisation from which they had not yet recovered when he did his field research there in the 1970s. Dime and Dizi had to abandon intensive agriculture. On pictures shot by Haberland (1993, photo 12, 15–19) one can see wide spaces covered with formerly cultivated terraces. North Ethiopian occupation and colonisation left devastation all over south-western Ethiopia. In the middle of the 1970s, the overall appearance of the landscape in northern Harso (Dullay linguistic area) was, according to my observations and aerial photo analysis, characterised by uncultivated field terraces and abandoned settlement sites.[26] In my judgement, the precolonial level of population density of the rural areas known to me was only reached again in the 1990s.[27] In South Burgĭ the oppression resulted in an increasing number of Burĝi migrating to northern Kenya, an emigration that has not yet come to a halt even today. Nowadays, at least half of the

[26] The Italian colonialists were welcomed as liberators in the beginning (1936). After the retreat of the Italians in 1941, "patriots" from northern Ethiopia tyrannized the people accusing them as collaborators. Burĝi was pillaged while all the cattle were driven away.

[27] Admittedly, I cannot refer to reliable statistics. Especially the census statements of the Imperial Era and the *Därg* period have to be read with doubt. So, as a rule, the former differ 100 per cent when compared to the more precise surveys of Norwegian missionaries. But the investigations of the latter are not comprehensive.

southern branch of the Burği population live outside their home country (Amborn 2009: 3; 284). Population decline and bonded labour for the conquerors inevitably resulted in the demise of the labour-intensive agriculture which recuperated gradually in some areas and is due to the flexible handling and transformation of handed down methods.

The intensified agriculture is part of a complex interaction of historical, demographic, social, religious, and ecological factors. In order to go smoothly this requires a moderate equivalent of human manpower and those who have to be supported. In areas where generation-group systems (*gadaa*) existed this was ensured by marriage regulations coupled with birth control (Amborn 1994: 175). In the 1970s and 1980s the *Därg* administration was only moderately successful when taking action against this traditional kind of regulation, but in our days the Protestant churches are much more efficient. Corresponding consequences can be observed particularly in the ribbon-built villages and administrative centres. One ought to be careful, however, with the charge of overpopulation. With reference to Boserup (1965) and other researchers, for Konso Watson (2009: 43f, 220ff.) was able to do away with the *topos* especially in use with development workers that population growth necessarily would bring about excessive exploitation of resources and hence environmental damages like erosion and as a further consequence famine. The example of Konso shows that this scenario is not inescapable. Rather the contrary, population growth may possibly encourage innovations, so much that more people in collaboration are in a position to extract higher yields from the natural environment. It is essential how and by whom the natural resources are utilised. In fact, several groups in the Burği-Konso cluster still figure crucially as regards the food-securing system of south-western Ethiopia. It should be noted that these are not some isolated subsistence farmers, but ethnic groups who, for hundreds of years, have been embedded in flexible economic networks with neighbouring groups. Exchange relationships with mobile pastoralists are of special importance, since, at times of drought, food shortages crop up in different economic systems at different phases (Amborn 1994: 175).[28]

The *Därg* regime brought further social and economic changes. Religious dignitaries had to cease their activities and the *gadaa* system was prohibited. Furthermore, the *Därg* government coerced the population of Diraaša, Konso, and elsewhere to cut timber in the sacred forests. This was not only detrimental to the forests, but also implied for many of these dignitaries the loss of spiritual power and authority, thus undermining the socio-religious order. The relocations based on resettlement programs have already been

[28] Nowadays, some groups are involved in the international trade of chat and coffee, meaning that they are affected by the global fluctuations in prices.

briefly mentioned above. Their repercussions were felt from Käfa in the north to central south-western Ethiopia. The south of the area dealt with in this paper was only sporadically involved.[29]

Extensive changes were bestowed on the population through the *Villagization Program*. To be sure, the hill farmers retained their land, but were forcibly relocated to subjacent central villages (*mändär*). This course of events did not only change established social structures, but destroyed them and therefore weakened the economic system. It was, in the words of Clapham (2002: 19), "counterproductive". This particularly affected the *ənsät*-growing areas in the highlands, but also damaged the cultivation of barley and wheat, as the fields could not be tilled and maintained anymore, due to the great distances from the new settlements.[30]

After the downfall of the *Därg* (1991), numerous farmers did indeed return to their abandoned villages, but even so the rate of urbanisation increased.[31]

The concomitant demographic changes as well as the construction of big farms in the lowlands had far reaching effects on the natural environment. In fact, there were no big farms built in the hillside areas of intensification; what has been really affected is the former "wilderness" with its resources for the hill-farmers. Effectively, in the plain west of Lake Chamo that is well-connected with modern Ethiopian infrastructure, the laying out of big monocultural farms has resulted in the total disappearance of big game. Of course, this also involves the natural flora.

Extensive deforestation, especially in the mid-1980s, has reduced the mountain rain forest in Kafa dramatically.[32] There is an increase of land-grabbing in Ethiopia, but the areas mentioned here have not yet been affected until now.[33]

The urbanisation is accompanied by an altered understanding and handling of resources. Even though the pipes occasionally lie dry, water is not

[29] Alone in the years 1984 to 1985 about 600,000 people were resettled (BRAUKÄMPER 2006; WOLDE-SELASSIE ABBUTE 2010: 376–379 [with additional literature]).

[30] ALEXANDER NATY (2002: 68) reports from the Aari: "When families moved into the new villages, they were not able to take care of their coffee plants at their abandoned sites because of the distance. As a result the coffee plants were damaged".

[31] According to *Index Mundi* 2012 (*www.indexmundi.com*) "Ethiopian Urbanization" which is based on the *CIA World Factbook* the estimated urbanisation for 2010–2015 adds up to 3,8 % annual rate of change. Cities and small towns growing fast not only because of external influx are also the hot spots of the much deplored overpopulation.

[32] Note RIECHMANN 2007, chap. 8. "According to the recent estimated rate of loss of forest of 80,000–200,000 ha by now, the area covered with natural forest will be disappeared in 10 years" (*ibid*.: 26).

[33] For the usage of big machinery of the kind used by "investors" these areas are not profitable enough. For land-grabbing see DE SCHUTTER 2011.

considered a scarce resource, a topic that should be carefully dealt with. And there is a similar relationship towards fuel. Only few women still look for firewood near a *kätäma* (which is scarce there anyway), instead they have to buy charcoal, the production of which reduces the stock of trees in the "wilderness". It is remarkable that the exodus to the ribbon-built villages is at its lowest where an intensified agriculture with its own measures of value and social relations is cultivated.

Famine relief can be quite problematic, too. Without information about the local social and economic situation, it often is more damaging than beneficial. Considering the circumstances, generous supply of cereals may destabilise the local price level so strongly that farming does not pay anymore. This holds especially true for maize. The trend benefits from the fact that the foreign grain does not qualify as seeds and leads to a vicious circle of dependency on relief supplies. A community in the Burği-Konso cluster (which is deliberately not named here) has reacted very clever to that. Instead of distributing the relief supplies scattershot, they decided in 2002 to found a cooperative to administer the supplies. They hired a brewer known for her excellent beer to process the grain and the beer was sold at a moderate price. The cooperative takes the proceeds of the sale to buy products that are seen as necessary for communal development. From incapacitation they went to responsibility.

It cannot be predicted how long this value system will be able to resist the drastic external influences of a political, ideological and economic kind. It is astonishing that, in spite of being regimented on a local level, many ethnic groups have succeeded in creating "islands" that act against the destruction of their habitat.[34] In practice, the unpredictability and variation of the natural environment has led to flexible management of resources, based on long experience. The combination of many different techniques and crops has ensured that the agricultural cycle was adapted to different situations. Appropriate action or agricultural areas was selected to suit particular conditions. This was essential for survival, especially in recent times, when the ability to react flexibly to external events has been important.

Due to their flexibility, communities with polycephalous social structure were particularly successful in integrating new elements selectively into their concepts, without abandoning their own worldview.

[34] The Konso could claim some kind of recognition when they presented their agricultural system at a stand of their own at the Expo 2000 in Hannover. In Konsoland itself, a village was established as a kind of open-air museum.

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Summary

Dealing with resource problems, energy balance and sustainable climate protection have emerged as subjects of public interest. Indigenous knowledge and concepts, however, are seldom dealt with by western scientists. On the basis of exemplary cases from southwestern Ethiopia the interdependence of technical, social and symbolic knowledge and experiences is demonstrated, from which a model can be derived. With the help of the model it can be shown, how, under certain cultural conditions, through controlled mastery of vital resources, a symbiotic relationship between humans and their environment can be developed which does not endanger the particular habitat. The decisive factor in this case is an *ethos* that places man in a context of space and time which goes beyond his own lifetime and provides a link to past and future generations. Counterexamples show the fragile character of the presented system of relationships.