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CAMEL ECONOMY: FROM LOCAL TO INTERNATIONAL MARKET

Bengoumi M.[1], Faye B.[2]
[1]*FAO-Tunisia;* [2]*CIRAD-France/FAO-Saudi Arabia*

Abstract

The camel productions are involved in local, regional or international economy. If the market of live animals, linked mainly to the meat market, is well developed in the Horn of Africa and Middle-east, the milk market knows a recent development in spite of the wide part still under informal sector. The wool presents a high adding value for the producers because the high quality of the fiber is appreciated by Western consumers.

Keywords: live camel, camel milk sector, camel meat sector, added value chain

ТҮЙЕ ШАРУАШЫЛЫҒЫНЫҢ ЭКОНОМИКАСЫ: ЖЕРГІЛІКТІ НАРЫҚТАН ХАЛЫҚАРАЛЫҚ НАРЫҚҚА ДЕЙІН

Түйе өнімдері жергілікті, аймақтық және халықаралық экономикада орын алады. Түйе малының нарығы түйе етімен байланысты болғандықтан Африка мүйіздігі мен Таяу шығыста дамыса, түйе сүтінің нарығы белгілі елдерде болмаса да даму үстінде. Түйе жүнінің өзіндік құны жоғары, сондықтан да батыс елдерінің осы өнімге деген сұранысына қарай өндірушілер де дамып келеді

Түйін сөздер: түйе малы, түйе сүті саласы, түйе еті саласы, баға қосу тізбегі

ЭКОНОМИКА ВЕРБЛЮДОВ: ОТ МЕСТНОГО ДО МЕЖДУНАРОДНОГО РЫНКА

Продукция верблюдоводства интегрированна в местную, региональную и международную экономики. В то же время, если рынок живых животных, во многом связанный с рынком верблюжьего мяса, распространен на Африканском Роге и Ближнем Востоке, то рынок верблюжьего молока переживает рост, несмотря на то, что большая его часть остается неформализованным. Верблюжья шерсть является продуктом с высокой добавочной стоимостью и привлекает производителей благодаря высокому спросу на изделия высокого качества на рынка западных стран.

Ключевые слова: верблюды, сектор верблюжьего молока, сектор верблюжьего мяса, цепочка добавочной стоимости

Introduction

Because of the relative lower camel population (estimated to 28 million heads), contribution of camels to world animal food supply is limited. However, its products and use for transportation allows people to adapt to the harsh environment and survive with limited resources of dry areas in Africa and Asia. Due to the desertification, camel is progressively encroaching tropical areas in Africa. In addition to use in transport, agricultural works, race and tourism, camel production includes meat, milk, wool and leather. Despite that the camel “desert caravan” played an important role in trade in dry areas, trade of camels and camel products is limited. In fact camels were mainly used for auto-consumption and transport. The international trade of camels and camels’ products is hampered by lack of scientific data and standards on quality and safety of camels and camel products. This review describes the main camel product value chains and constraints to their trade at national and international levels.

Live animal value chain

At local or national level, live camels are sold by nomadic or transhumant people during fests, festivals and fairs that are generally organized by the end of rainy season where animals are in good body scores. In India for example, the Pushkar fair is one of the most important in the world gathering more than 10,000 live camels. The main camels marketed include good lactating females, race animals and males. With the progressive settlement of camel herders, there in an important increase demand for camel products and therefore an increased in live camels trade. Males between 2-4 years olds are sold for fattening units.

International trade of live camels is mainly organized between Sahelian and North African countries and between Horn of Africa and the Arabian Peninsula. This international trade of live camels is linked to the meat market, the main consumption basin being in the North Africa and Middle East. This trade is hampered by the lack of scientific and technical knowledge compared to other domestic animals, non validated laboratory diagnostic methods and absence of clear willingness of importing countries using non tariff barriers. Since 2007, OIE has established and *ad hoc* group on camelid diseases to establish standards and facilitate trade of camels and camel products (Faye, 2009).

Based on the example of the study of Alary and Faye (2009) in the Horn of Africa, this regional market of live animals was composed of different economic circuits:

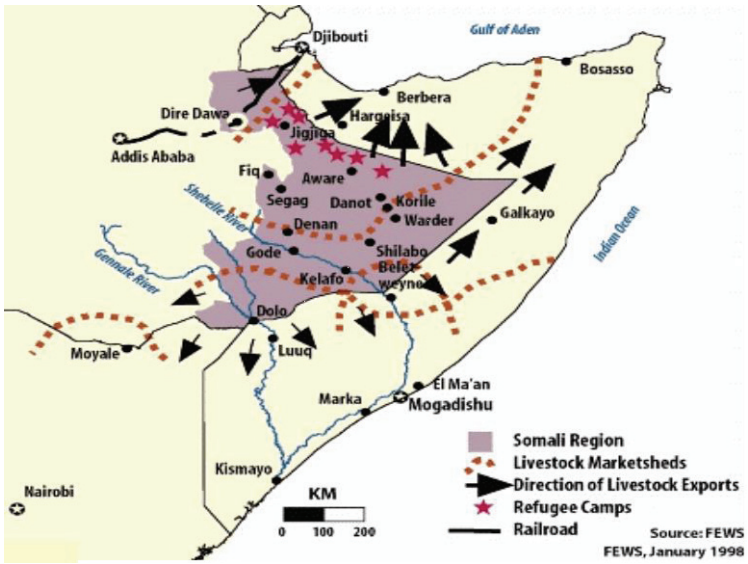


Figure 1: Livestock market sheds in the Horn of Africa (Source: FEWS, 1998, cited in Pratt et al., 2005)

The formal market

The main internal circuits are:

The Yemen market: animals are trucked until Djibouti and they are directly shipped on Yemenite boats without using the quarantine or veterinarian services in Djibouti.

Saudi Arabia or Emirates markets: animals are parked in the quarantine station of Djibouti before being re-exported.

Egypt market: Egyptian inspectors come directly to Ethiopia to control the sanitary status of animals before their exportation through the Port of Djibouti.

If the formal circuit by Djibouti is well developed, Ethiopian stakeholders (officials and private) would like to diversify their points of exportation. For that, the Ethiopian government is developing its own system of quarantine in direction of Sudan, Djibouti and Somali land to facilitate the international marketing of live animals.

But if this formal market is the most organized, some stakeholders can use illegal practices along the chain either for the financial/custom procedure to facilitate the convoying of animals or for the veterinary procedures to avoid or to get around the legal procedure imposed by importers. In fact these circumventing aims to maintain the international market of live animals in the region.

Clandestine or illegal market

At the opposite, there is the clandestine market called illegal market or smuggling activities. The smuggling chain was quite developed in Dire-Dawa (Ethiopia) and could constitute the “lung” of the town (declaration of one trader). This chain is based on the barter economy: live animals to merchandises (staple food, household electrical appliances, computer, mobile phone, etc.) as if the purchasers of animals can be different from the sellers of merchandises. In this system, the camels are the main way of transport of the merchandises. Before the reinforcement of the official controls on the Djiboutian border, the majority of this trade was developed with Djiboutian traders who belong to the same social network (family or ethnic). Now this clandestine activity is developing with Somali traders through the Somaliland border. The unstable political situation in the region is facilitating this kind of commercial circuits.

The semi informal chain

Despite the civil war in Somalia (and the reinforcement of Ethiopian military controls at the border) and the ambiguity of the status of Somaliland, the export activities through Somalia are always functioning. This has been confirmed with interviews on the markets. In this system, the Ethiopian traders buy the animals on the local markets and truck them until the Somaliland border. They have already contracted with Somali traders who ensure the passage of animals through the border by the way of dealers. Then the live animals can be sold on the local markets or trucked until the Port of Berbera or Bossasso to be re-exported. This long circuit involved many changes of ownerships and result from a combination of informal and formal circuits.

Whatever the commercial circuit (which includes cattle, sheep and goat as well as camel), the profitability is good for the traders. The highest profit is regarding camel. The camel export activity revealed a profit around of 300 Ethiopian birrs/head in formal trade and around 200 Birr per head of camel in informal trade (Alary and Faye, 2009). However, these data registered important variations. Firstly the purchasing prices are very fluctuating with Muslim or agricultural calendars and natural events (drought, inundation). It was also difficult to have reliable data on the legal and illegal taxes on the road check points.

Finally, an important gap occurs between the sources of data and a large proportion of camels evade the legal market. For example, in Ethiopia, it has been stated that 69,000 camel heads were potentially exported in 2005 while only 9223 heads were estimated to be sold according to CSA estimation (Alary, 2006). If the cattle market is relatively well controlled, the camel chain evade to the official market and then this opportunity doesn’t appear in the national or regional economic indicator.

Since 1991, the civil war in Somalia has induced disorganisation of official services such as the veterinary services, the customs and bank services, mainly in ports for exporting livestock, and consequently favoured the official position of Djibouti and Port Sudan in the international market of live animals for the region. This has led to the development of a veritable network of smugglers in the sub region of Djibouti-Ethiopia-Somalia that export animals via Yemeni traders who re-export animals to Saudi Arabia. Although the Somaliland area in the North of Somalia has been relatively peaceful, the

capacities of negotiations of the traditional traders' networks in the area have been relatively weakened by the global political context.

Milk Value chain

The milk is one of the main production of camel with a high interest for local population in arid lands for at least 3 reasons: (i) the main part of the production is self-consumed and thus, contributes to the food security of arid lands, (ii) there is a growing interest for camel milk from the urbanized population in those areas and then an increasing market opportunity, (iii) there is a trend to the development of dairy camel intensive system which could be profitable for settled producers.

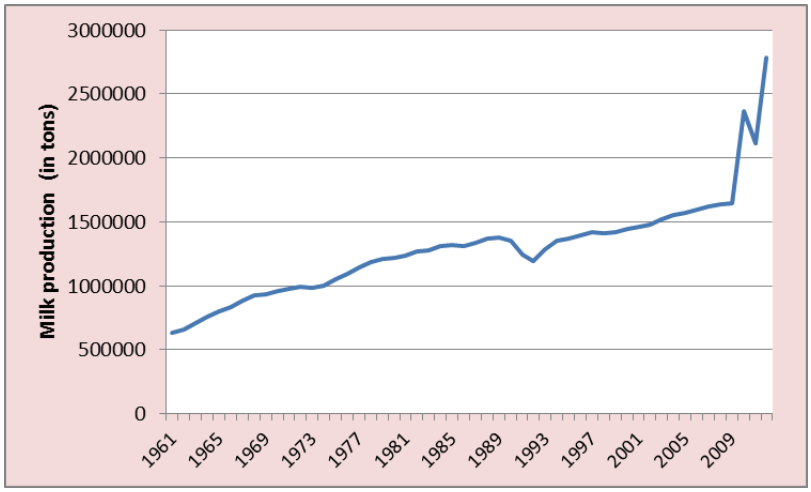


Figure 1. The camel milk production according to FAO statistics

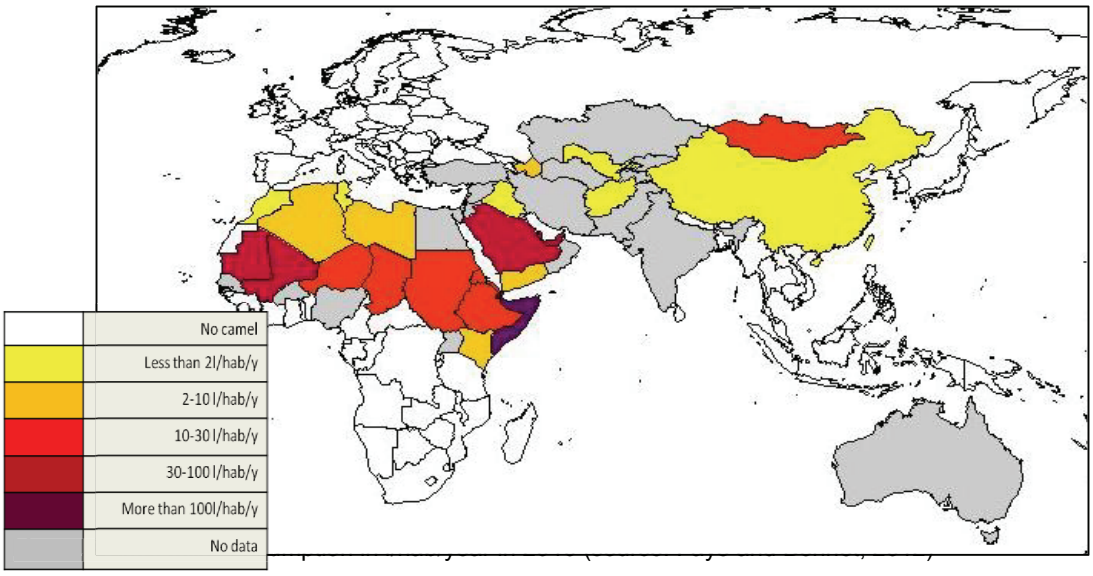
Camel milk was not sold by pastoralists that use it as a gift or limit to local market, notably because the lack of infrastructures (lack of cooling tank, lack of collect network, lack of specialized dairy plant…). The difficulties for collecting camel milk in remote pastoral areas and the lack of standards for quality control contribute also to the low development of the milk value chain. However, the camel milk was recently integrated in the market in many countries of the camel world. Indeed, the urbanization and the modernization of the farming systems had contributed to the development of a camel milk commodity channel although, the organization of this value chain is just beginning. National camel milk marketing started in the eighties in Mauritania and thereafter in many other countries. The demand of camel milk is increasing despite its higher price compared to cow milk. Milk industry is now developed in many countries and several milk products are regularly produced. An important progress was made the last five years in producing different camel milk cheese (Jones-Abeiderrhamene, 2013; Konuspayeva et al., 2014), especially since the production of a specific camel chymozyme produced by Hansen company. The important progress in camel milk industry in several countries doesn't allow them to export camel milk products. For example the European Commission is still refusing importation of camel milk products despite their good quality and safety. Standards of camel milk needs to be established by the *codex alimentarius* based on the scientific knowledge and characteristics. However, recently, the Camelicious farm at Dubai succeeded to export pasteurized camel milk in UE after a long way for respecting the expected procedures valuable for an international market (Nagy et al., 2014). But, even if modern camel industry is developing with integration to national market, the part of milk out of the market could be still high. For example, in Saudi Arabia, three market chains were used by the farmers: (i) producers having traditional dairy workshop selling milk to local small shops and mini-markets and a lower part directly to the consumers; (ii) producers having medium herd size in settled enclosures and selling all the milk directly to the consumers in bulk, along the roads; (iii) producers selling all the milk to distributors or having their own distribution network, notably the big integrated dairy farms. These three market chains represented no more than 38% of the camel milk produced in the country (in which the big modern farms were 21%). Its' mean than 62% of the camel milk is self-consumed or given and thus, out of the market (Faye et al., 2014). Similar figures are observed in other camel countries, the camel milk sector being dominated by informal sector (not necessary in volume, but mainly in number of stakeholders) and by self-consumption. The distribution network, except for the big integrated farms, is limited to small shops in the towns. For example, it is noticeable that camel milk is very rarely available in the main chain of supermarkets in most of the countries. Yet, the demand is increasing in spite of the high price of the camel milk. The development of the camel milk value chain requires a better selection of the best dairy animals, a better access to the urban market, an efficient quality control and a distribution network fleshed out.

Based on the available FAO statistics, the camel milk production was increased by 6.6% yearly, i.e more than the camel population. Passing from 629,148 tons in 1961 to 2,785,382 tons in 2012, the camel milk production was multiplied by 4,4. At the world level, the camel milk represents 0.37% of the consumed milk but this proportion is probably underestimated. The camel milk consumption varied according to the countries between 2l/hab/Year (Tunisia, Morocco) to more than 100l (Somalia) with an average of 4.5l/hab/year (Faye and Bonnet, 2012).

Meat Value chain

The demand for camel meat is increasing because of its dietetic/therapeutic quality and in many countries because its price is competitive with other meats. Moreover, it was facilitated by the settlement of nomadic or transhumant camel herders. Even if traditional pastoral fattening systems exist, especially in the Horn of Africa, specialized fattening units are increasing especially in periurban/suburban areas in the Sahel and North African countries and Arabic peninsula. Animals (mainly males) are slaughtered between 2 and 5 years. Slaughterhouses are generally not adapted to camels and vets are not well qualified for camel carcass inspection. Due to its expected dietetic quality, the camel meat could have an advantage for human consumers, especially in well-educated middle classes from cities. Moreover, with the climatic changes and desertification process in some countries, the camel production would increase its distribution area. And finally, the extensive farming system could guarantee the production of environmental friendship meat. Thus, the conditions

for an increasing contribution of camel in the meat supply at world level are present. However, this progress will be possible only with an improvement of the meat productivity which is low in this species compared to the other domestic animals, with an efficient market, with a better control of veterinary services and a better communication on the dietetic and nutritive interest of camel meat.



Contrary to milk, the camel meat market is widely integrated in regional market and at the base of the important flow of living animals described above. Indeed the export for meat production is rarely based on carcass marketing. From 1961 to 2012, the camel meat production increased at a rate of 4.14 from 123,000 to 510,000 tons. The more important camel meat producers are Sudan, Egypt, Saudi Arabia (KSA) and Somalia, but some of these countries are mainly exporting (Sudan, Somalia) while others are rather importing (KSA, Egypt).

The contribution of camel meat to the world meat production is rather marginal due to the less significant place of camel among the herbivorous. Compared to all meat producing types (except fish), the camel meat represents 0.63 % of the total meat produced in the world (in 2012) and 0.45% of red meat from herbivorous. This proportion was almost the double than in 1961 (0.35%). The annual growth of this market is 6 % which is higher than buffalo (4.5%), cattle (2.4%), sheep (1.4%) or horse meat (0.7%). Only the production of goat meat has a higher growth (7.3%)

Obviously, the contribution of camel meat to total red meat production varies according to the regions. The camel meat production represents 3% of the total meat market and 4.1% of the red meat market in Eastern Africa, 2.7 and 4.8% respectively in Northern Africa, 2.0 and 2.9% in Western Africa, 1.4 and 3.7% in Western Asia. In other regions, the contribution of camel meat is less than 1% of the red meat produced in these areas. The main contribution is Africa (2% of the total meat and 3.2% of the red meat), i.e. more than Asia (0.1 and 0.45%, respectively).

The slaughtering rates varying between countries, it may partly help to understand the camel meat market (Faye et al., 2013).

- Countries such as Egypt, Saudi Arabia, Bahrain, UAE, Libya, Kuwait, Oman and Qatar as well as Morocco have slaughtering rates higher than 20% which is not compatible with the simultaneous growing camel population in these countries. However, these countries also import live camels for their local meat market. For instance, with a slaughtering rate of 121%, Egypt is slaughtering more than its own camel population.
- In China, the high slaughtering rate (30.4%) could explain the strong decline of its camel population because no camel importation is taking place.
- On the contrary, in the Horn of Africa, the slaughtering rate is lower than the world mean value: Somalia (3.7%), Ethiopia (4.2%), Sudan (5%) and even Djibouti (6.4%) or Kenya (6.7%). These are countries where the export of live camels in quite important.
- The very low slaughtering rate could be explained by the lack of data (unofficial slaughtering like in Central Asia), the exportation of live camel through unofficial channels (Chad, Niger) or where the human diet generally lacks meat (India).

The main regions for camel meat market are the Horn of Africa (countries of the calving) and Middle-East (consumption basin). In Eastern Africa, the camel stock that amount to around 12 million heads contributed 62% of the world camel stock in 2009. Less than 4.3% of this stock is slaughtered for local consumption.

At the end of the nineteenth century, the 'Somali' pastoral area that covered the Eastern part of Ethiopia, Northern part of Kenya and central and Northern part of current Somalia established a well-functioning marketing chain to supply the British garrison established at Aden in 1839. The international trade extended until the Persian Gulf region and the Indian sub-continent. This period experienced the development of a very dynamic network of pastoral traders and brokers (based mainly on strong parental ties or lineages) that registered an increase of activity until the seventies. This was mainly due to the explosion of the demand in Saudi Arabia (due to the sacrifice for pilgrimage to Mecca and the petroleum boom). The livestock market involved mainly sheep, but camels were also significant component of this trade and one of the best beneficial for the traders and local economy.

The politic crisis and the outbreak of Rift Valley Fever since 70's and 80's in the Horn of Africa have perturbed the organization of the legal market mainly based on family networks. This period also witnessed the emergence of new competitors in the region such as Sudan and Ethiopia. The reinforcement of the smuggling livestock trade activity due to the insecurity affecting the region since the mid 1970's benefited also from the strong family relationships. These include

kinship, ethnic and clan-based affiliations in the pastoral area that cover eastern Ethiopia (Ogaden), Somaliland (Somalia) and Northern part of Kenya (Little et al., 1998).The Somali or Boran traders ensure the transfer of livestock between the three countries and their trekking until the Ports of Somalia (Berbera, Mogadishu and Kismayo or even Djibouti). This smuggling activity is also permitted because of camels that ensure the transport of merchandises from the Ports to the remote areas.

Moreover, during the recent ban on livestock export imposed by Saudi Arabia (1998 to 2000 and 2001 to 2004) because of outbreaks of Rift Valley Fever in Ethiopia and Somalia, and insufficient veterinary control, the pastoralists suffered from an economic crisis (Pratt et al., 2005), the camels economic activity has permitted to maintain an export activity in the area either by the exportation of live animals or by the increase of illegal market of merchandises.

Camels are imported by the Gulf States, primarily for racing, but some are slaughtered. Camels for slaughter are mainly marketed in Egypt and Libya. But the exports of camels from Djibouti have dropped off, mainly due to the new facilities provided by the port of Djibouti and the quarantine at Nagad (Faye, 2004).

In the Central and Western Africa, the main exporting flow of live camels for meat market is from South to North (Sahel to Northern Africa). The gap between potential production and official export in this region is more important than in the Horn of Africa with a significant lack of data on this market. The traders organize their exportation roads on the basis of ethnic or family relationships where the Islamic agreements are quite central in the convention, especially in unofficial trade.

However, in general, there is a wide need of economic data to be collected in order to quantify the export flow (mainly for the meat market, contrary to the export to the Gulf countries where camels are used for racing and reproduction) and assess the economic contribution of camel in the regional meat market.

In India, there is no official camel meat market where the meat consumption for most of the Indian communities is a taboo, and the farmers are not willing to sell animals for butchery. However, most of the camels sold from farms in Rajasthan are young males sold presumably for carting and ploughing (Benard et al., 2008), however, their final use once out of the hands of the farmer within Rajasthan state or overall out of the State or out of India is difficult to know (Faye et al., 2010). In spite of the declining camel population in India (Köhler-Rollefson, 2004), the local market is not based, contrary to some suppositions, on the marketing of females because the reservations of the camel owners for cultural and economic reasons.

In Central Asia, since the Soviet Union collapse, the centralized agricultural markets are deeply disturbed and the restructuring through private sector is still not yet completely achieved. The camel meat market remains local with a high proportion of self-consumption. However, a demand is increasing with the development of collective restaurants in industrial complex. Yet, the camel meat chain is still short, directly from the producers to the consumers. In Turkmenistan, the dromedary meat (Arvana breed) is highly appreciated by the local population. Young camels lately weaned are prepared especially for slaughtering and a selection on growth was achieved in collective farms (Saparov and Annageldiyev, 2005). Heavy adult animals for slaughtering (up to 1300 kg) are reported in some local reports. Contrary to African continent and Near-East, the camel meat market in Asia remains local.

The camel meat processing is still marginal even if camel sausages are available (for example in Turkey) as well as "camelburger" (Ulmer et al., 2004).

Other products

The wool collected is used to produce cloths, carpets and tents. The quality of wool depends on the breed and age of camels. Some studies were undertaken to compare the quality of camel wool compared to the sheep. Recent development of international market is observed especially in Central Asia where high quality camel wool linked to the promotion of luxurious clothes. Those productions allow an important added value. In Mongolia, some camel breeds of Bactrian camel are specially selected for the quality of their wool. Camel cashmere is available and exported from Central Asia to Europe and North America (even on web) as for the small camelids wool.

Due to the slaughtering methods of camels, the prevalence of skin diseases and fire identification, the quality of leather is not very good compared to the other animals. International trade of wool and leather is limited even if recent progress were done in Tunisia in the technology of collect and processing the camel leather.

Camel race is an important activity in Gulf countries and national and international of trade of race camels is an important lucrative activity in the Arabian Peninsula.

Conclusion

For long time the camel productions were limited to the self-consumption or to a limited local market. The modernization of the camel milk sector has allowed the integration of camel milk in national market and, in a less extent, in regional or international market. The camel meat at reverse is well integrated at regional level while products as wool are already well placed at international level.

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