

Impact of connectivity on Nepali foods, food habit and nutrition



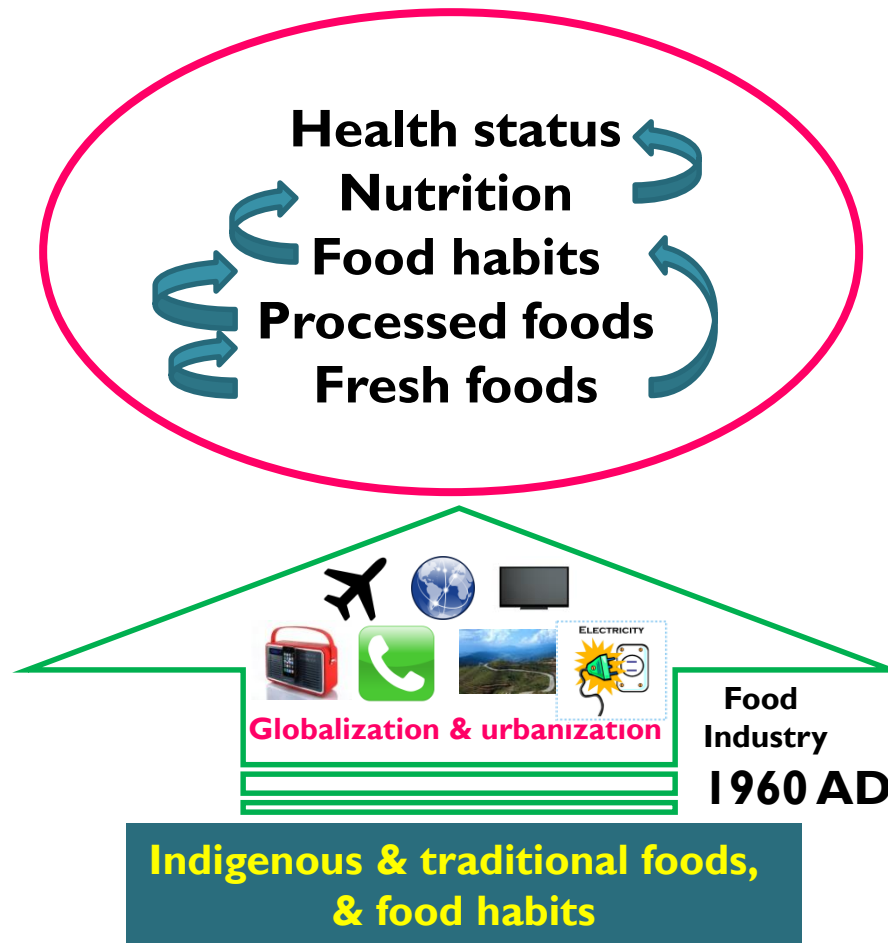
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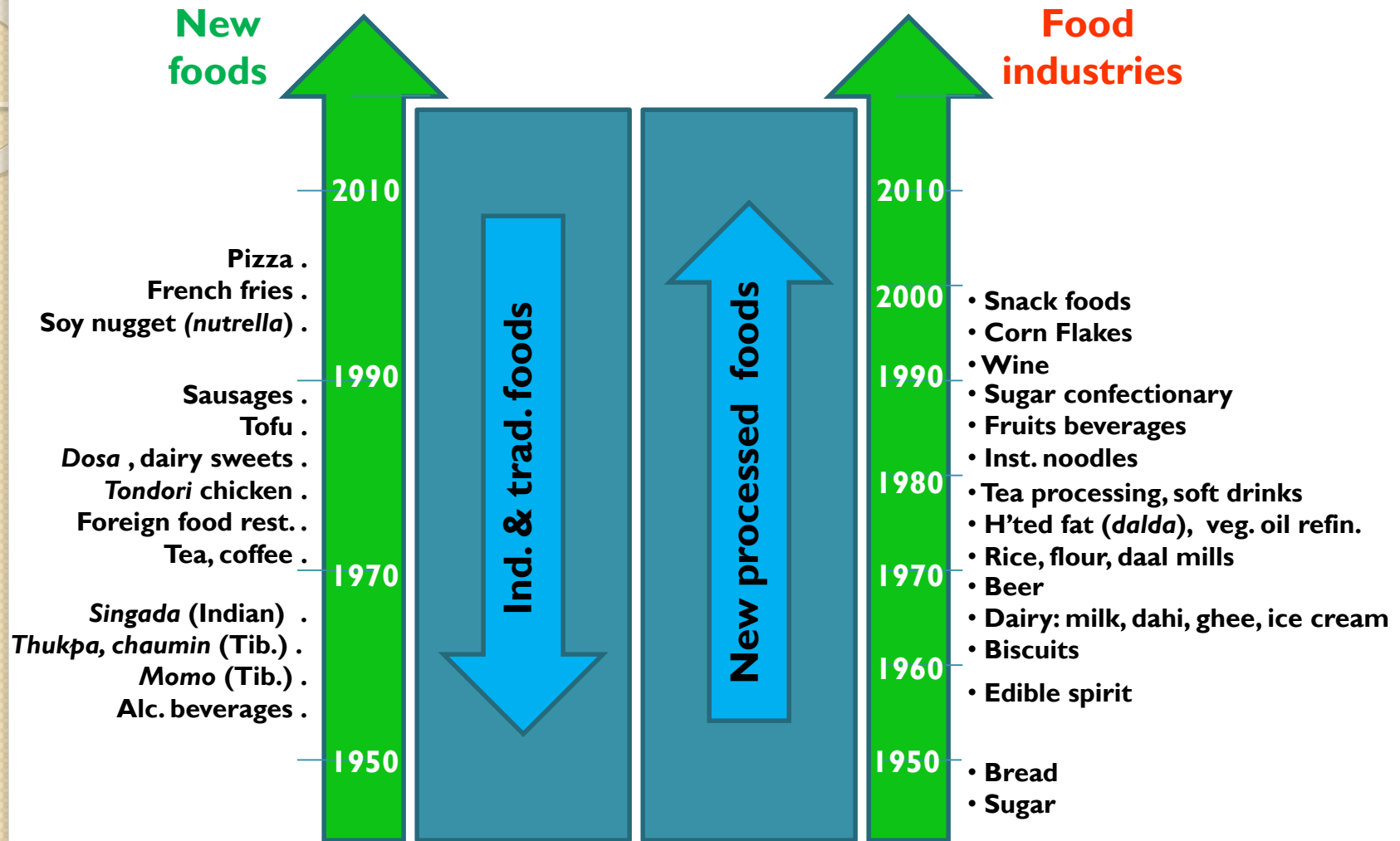
Contents

- ✓ **Chronology of foods and food industries in Nepal**
- ✓ **Comparison of past and present food habits**
- ✓ **Changing of eating time and frequency**
- ✓ **Impact of shifting food habit on health**
- ✓ **Conclusions**

Connectivity, foods and health status



Emergence of Nepalese food industries and new foods



Shifting of carb sources

Past trend

- Local produces were main staples:
 - ✓ Rice and wheat in Tarai,
 - ✓ Maize, millet, barley, buckwheat and rice in hills and mountains
- Grains were milled locally into whole ground flour and brown rice
- Prepared traditionally from local staples and consumed



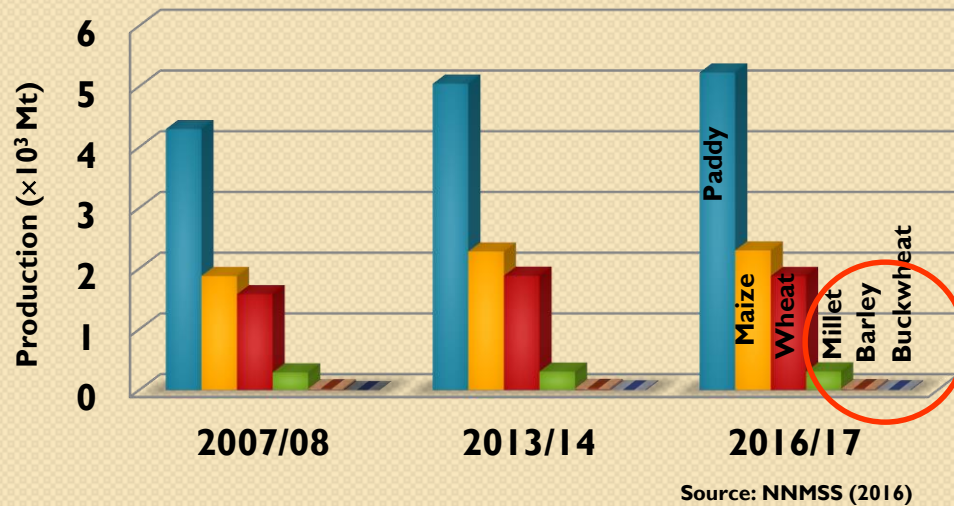
Present trend

- No more depends on local produces
- Local crops becoming less important
- Now, white maida and polished white rice are dominant
- Traditional foods are being replaced by ready-to-cook/eat products like instant noodles, pasta, plain noodles, biscuits, bread, cakes

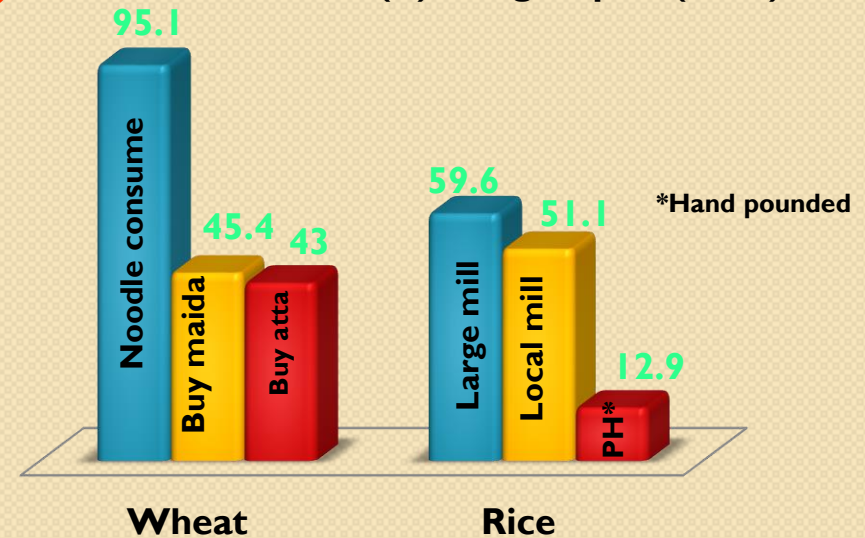


Major cereals production and household uses

Major cereal grains production



Household (%) using staples (2016)



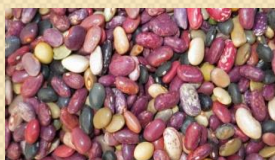
Source: NNMS (2016)

Shifting of protein sources

Past trend

- **Vegetable sources:**

- Local whole beans and pulses were dominant in their diet



Local beans

- **Animal sources:**

- Less fresh meats (buff, mutton > poultry > egg > fish) and limited dried meat/fish were consumed

- **Processing methods:**

- Traditional processing & preparation methods (Kharel et al., 2010) were often practiced (e.g. germination, boiling, roasting, etc.)

Present trend

- Gradually shifted towards hulled and split pulses



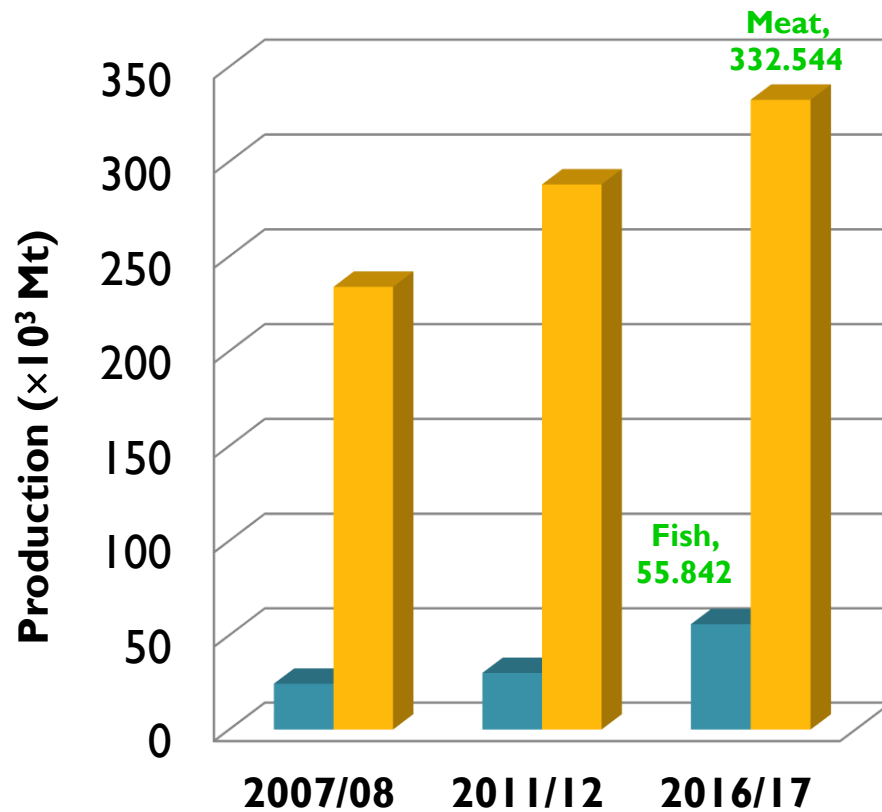
Hulled & split moong daal

- More meats, fish, eggs, and processed meat products are consumed

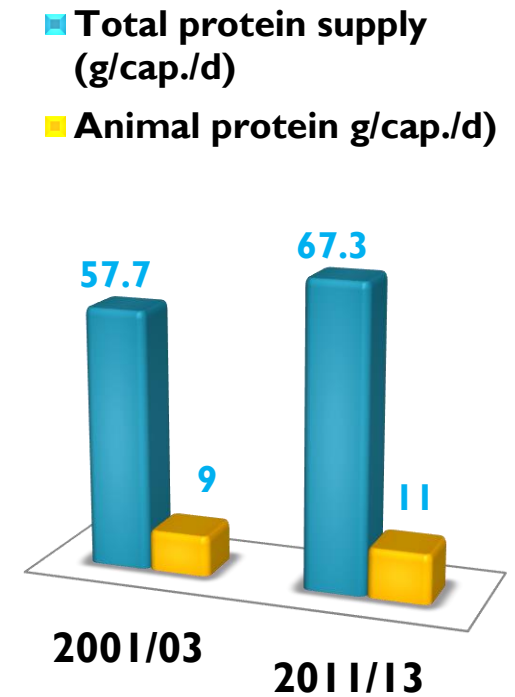
- Lesser interest on traditional foods and food preparations



Protein consumption trends



Source: SINA (2016/17)



Source : FAO

Fruits and vegetables (FV)

Past trend

- **Mainly seasonal FV were consumed**
- **Use of chemicals was less or absent**
- **Only veg are considered compulsory with meal**
- **Fruits were taken as an optional and not so imp. in Nepali diet**
- **Limited quantity of FV were sun-dried or fermented for future uses**

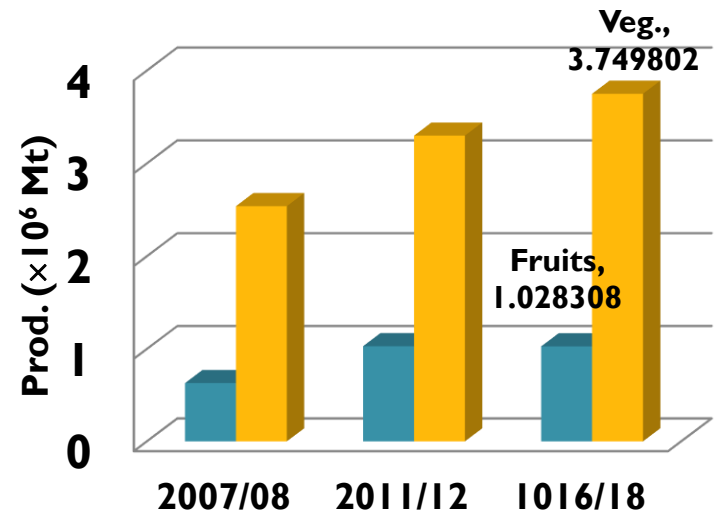
Present trend

- **Off-seasoned veg are also coming up**
- **Use of chemical is increasing at an alarming rate**
- **Same trend prevails**
- **Interest has increased esp. on sweetened fruit juices rather than fresh fruits**
- **Not significantly increased**
- **Recently, farmers are also interested in high-value fruits (kiwi, dragon fruit, strawberry, avocado, persimmon)**

FV: production and consumption

- ✓ **Studies (Vaidya et al., 2013; Hall et al., 2009) showed that about 98 % of Nepalese pop are not consuming FV combined as per WHO recommendation [min. 5 servings (400 g)/d]**
- ✓ **A study (Vaidya et al., 2013) reported that an average intake of FV combined was only half the recommendation of WHO**

Production of fruits and vegetables



Source: SINA (2016/17)



Confectionaries

Past trend

- In the past, confec. products were limited and mainly of home-made type
 - *Kurauni, pustakari, gundpak* (prepared from khoa)
 - Jaggery or sakkar (prepared from sugarcane juice)



Present trend

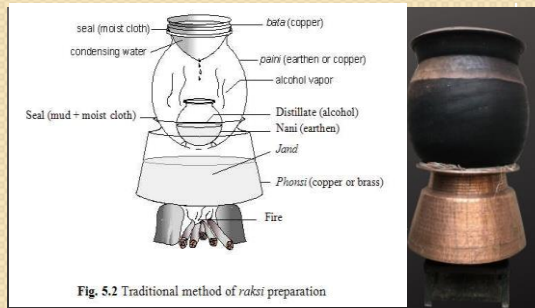
- Today various confec. products are available on the market
 - Dairy- or flour-based confec.
 - Sugar- or chocolate-based confec.



Beverages

Past trend

- **Local alcoholic beverages**
 - Jand (beer-like local bev. from millet or rice)
 - Raksi (locally distilled spirit from jand)



Source: Kharel et al. (2010)

- **Non-alc. beverages**
 - Natural water, tea, mohi (butter milk)

Present trend

- **Local alcoholic bev. are almost replaced factory-made spirit, beer, wine**
 - **Non-alc. bev. are:**
 - Processed water
 - Tea, & coffee
 - Carbonated drinks
 - Sweetened juices
 - Energy drinks
- High sugar

Khaja (2 pm snacks)

Past trend

- **Chiura (beaten rice), roasted soy plus maize, puffed rice, chapatti/roti (flour: buckwheat, millet, maize, barley, etc.) were coupled with:**
 - Boiled egg, omelet, meat roast
 - Veg soup, pickles, *tarkari* (veg curry)
 - Beans (fried or curried)

Newari khaja set →



- **Drinks: water, tea, *mohi*, (*jand*)**

Present trend

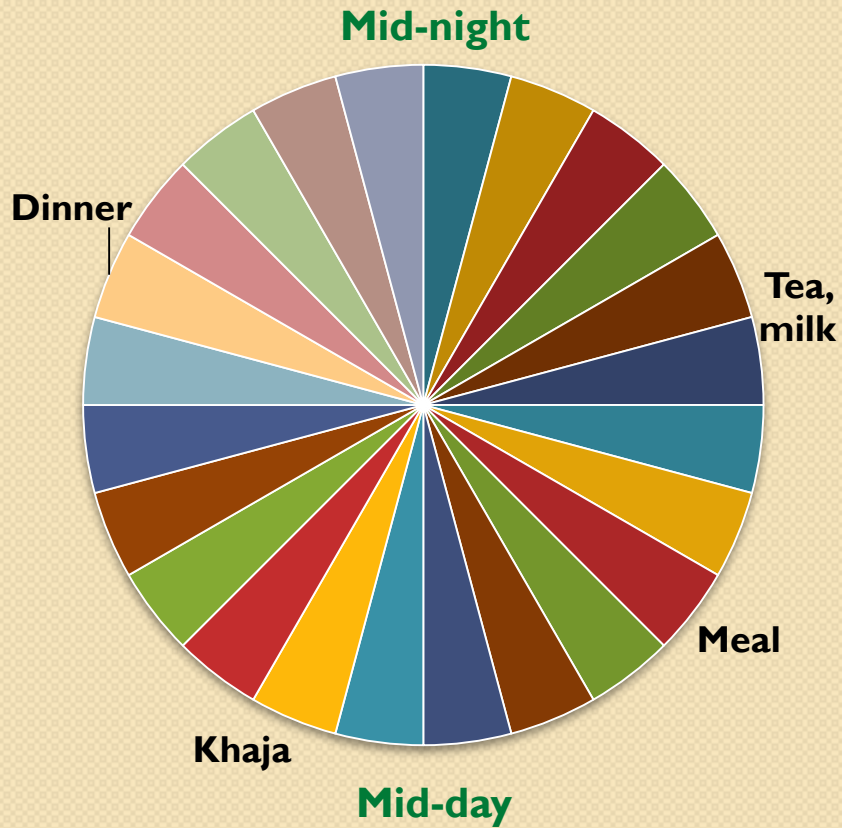
- **Shifting towards**
 - White flour (maida) products, e.g. instant noodle, pasta, ramen, biscuit, cake, doughnut
 - Highly processed foods (potato chips, cheese ball, etc.)
 - *Chatpatte*, *panipuri* (hygiene !)
 - Momo or chaumean



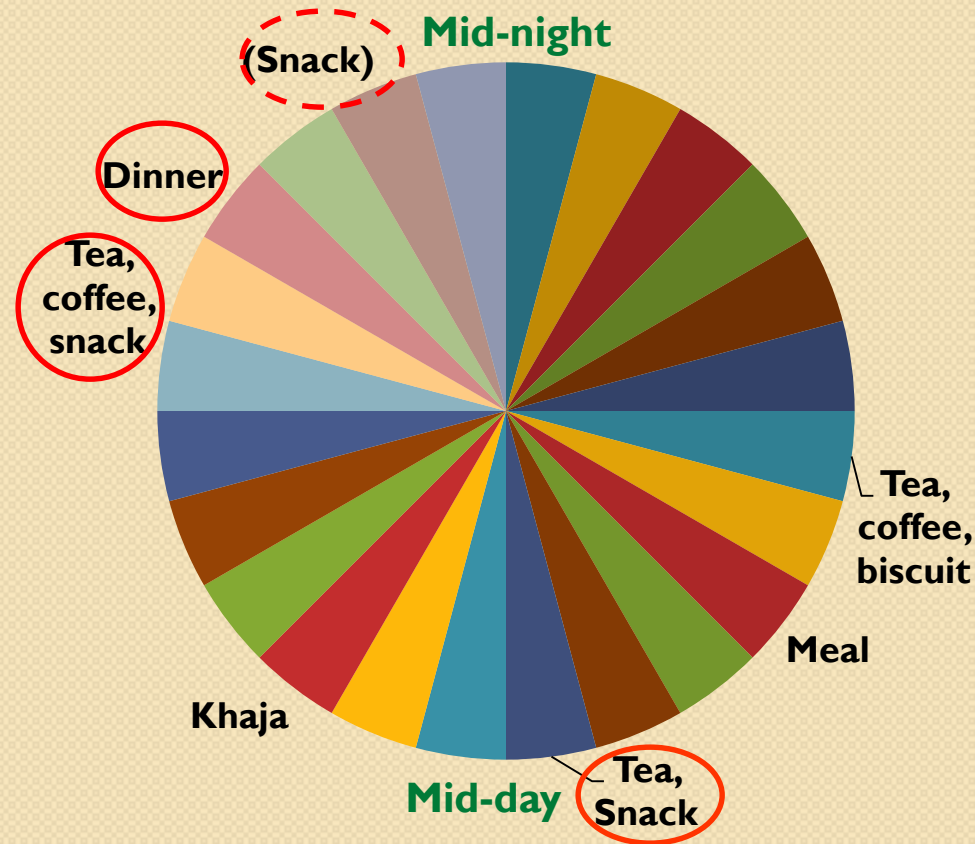
- **Often coupled with cola, packed fruit juice, tea or coffee (high sugar !)**

Time & frequency eating

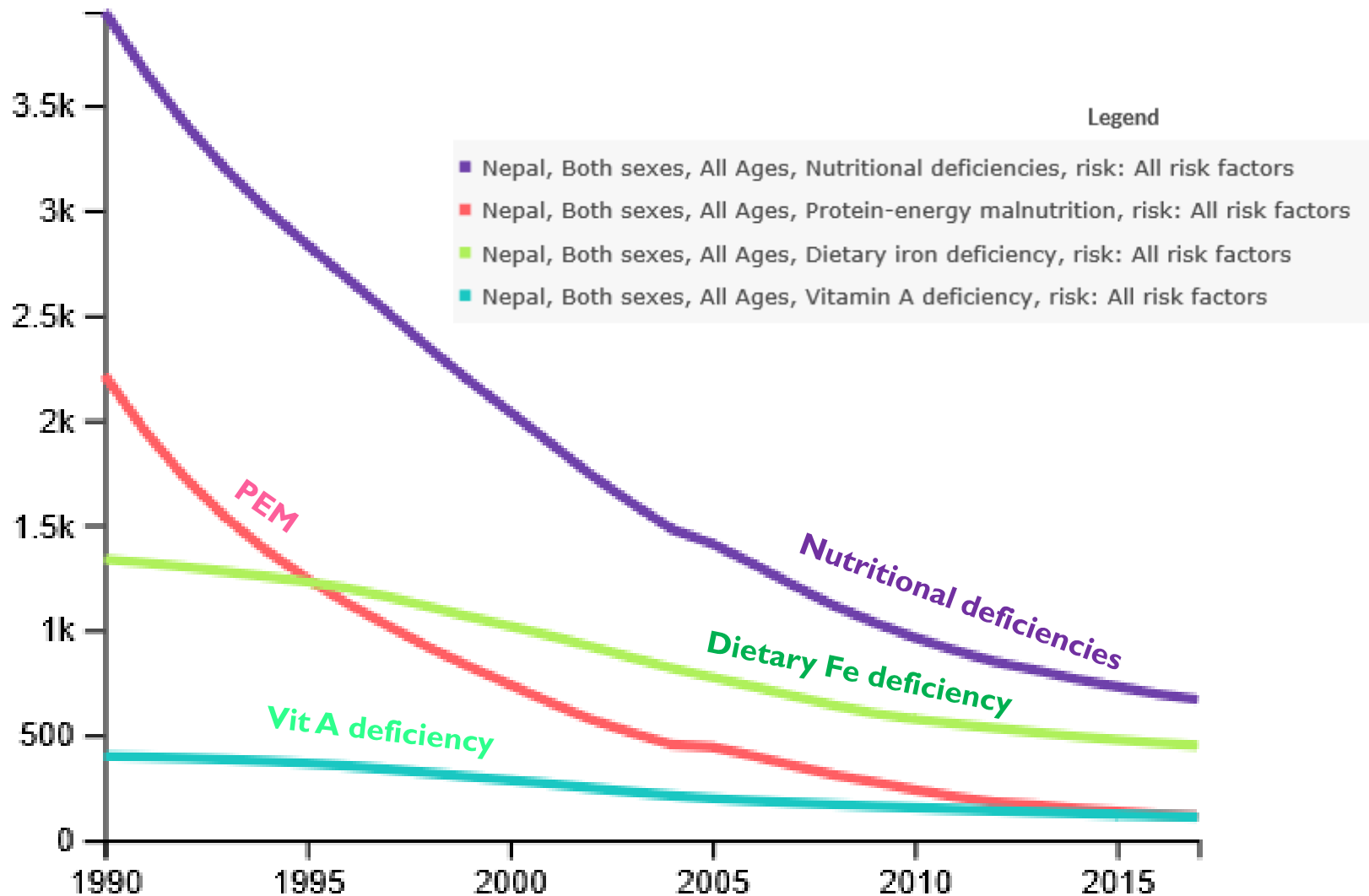
Past trend



Present trend

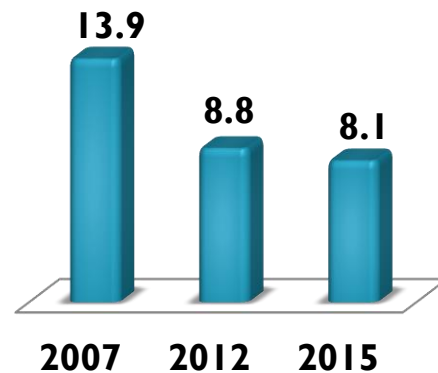


DALYs (Disability-Adjusted Life Years), rate per 100k



Source: IHME

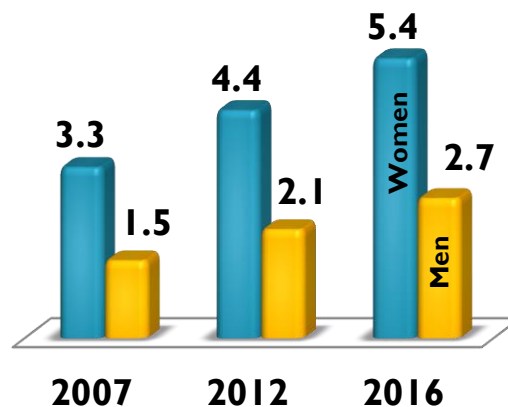
Prevalence of undernourished pop. (%)



Source: WB

- Percentage of pop. not getting min. dietary energy requirement has been decreased gradually

Prevalence of obesity (% , 18+ years)

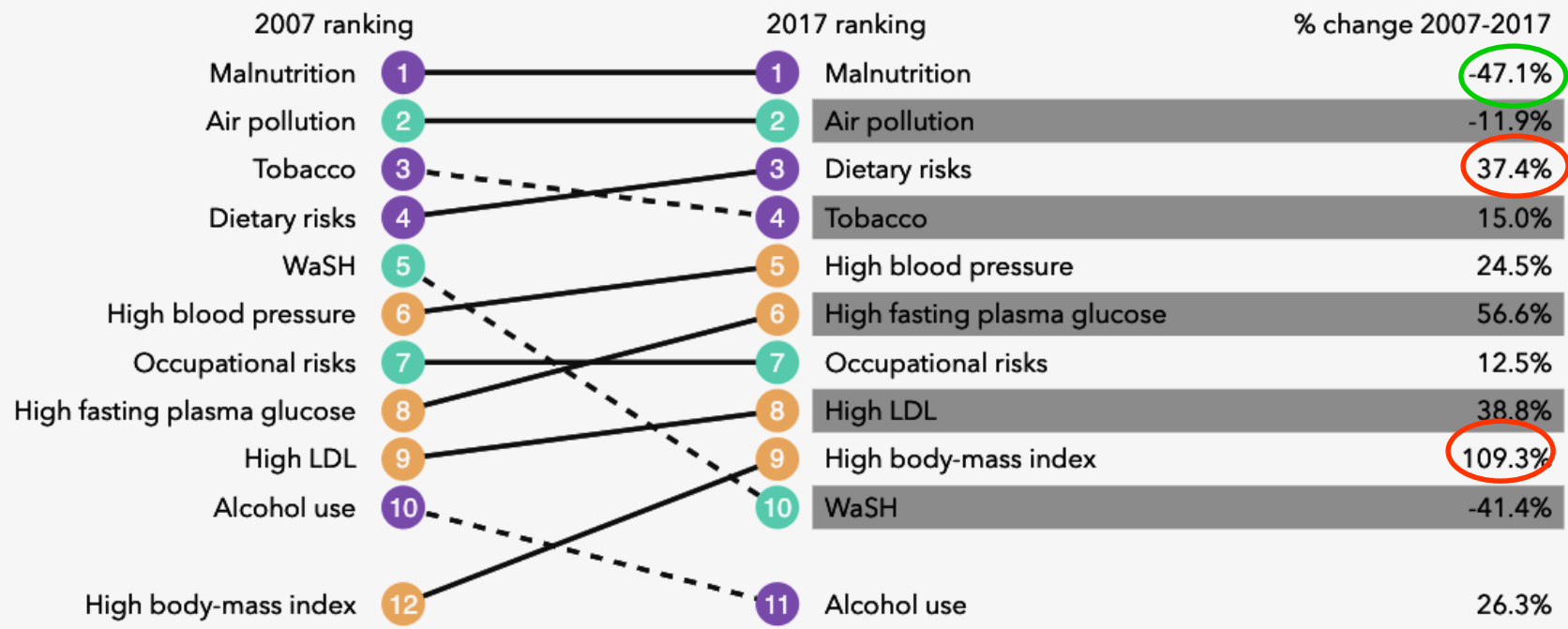


Source: WB

- Subedi *et al.*, (2017) reported that obesity and non-communicable diseases have been increased due to the shifting of food habit towards processed foods

What risk factors drive the most death and disability combined?

- Metabolic risks
- Environmental/occupational risks
- Behavioral risks



Source: IHME
<http://www.healthdata.org/nepal>

Top 10 risks contributing to DALYs in 2017 and percent change, 2007-2017, all ages, number

Conclusions

1. **Connectivity (cf globalization and urbanization) has a great impact on Nepalese foods, food habits and nutrition**
2. **Consumers' interest on traditional foods has decreased against highly processed, convenient and tasty food products**
3. **Processed foods are generally high in salt, sugar, saturated and *trans* fat, and contain more hostile chemical residue**
4. **In recent years, under-nutrition and deficiency diseases have decreased, but obesity rate has increased. It is a cause of many non-communicable diseases**
5. **This problem may be addressed by changing food habits, nutrition education and producing more healthy foods and food products**

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Ideal Nepalese veg set meal



<https://www.quora.com/What-percent-of-Nepalis-are-vegetarian>

Ideal Nepalese non-veg set meal



<http://archive.nepalitimes.com/news.php?id=18262#.XbVo6v57nVI>

Thank you